Basic Package for Oral Care: A Means to Tackle Community Dental Needs

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Abstract

There exists a gaping rift between the available dental services and the need for dental care in communities, giving rise to the 'inverse care law'. WHO in collaboration with the University of Nijmegen, worked along the principles of Primary Health Care (PHC) to give the Basic Package of Oral Care (BPOC) which is designed to cater to the dental needs of outreach populations within the confines of minimum resources such as lack of electricity and dental setup, for a maximum effect of providing emergency, preventive and curative dental care. Implementing BPOC with prudent use of existing PHC workforce, local resources and collaboration with NGOs could be the best answer to tackling the dental needs of communities.

Keywords: *BPOC, ART, AFT, OUT, PHC.*

Introduction

Health is considered a fundamental human right. Various attempts have been undertaken by international health agencies such as the World Health Organization (WHO), and by individual governments to make this a reality but still have a lot to make up for. Primary health care was proposed by WHO and UNICEF in the Alma Ata declaration.[1] This recommended reliance on local, easily available means of healthcare to address the felt needs of the local population. Though tremendous improvements are observed in the form of a fall in mortality and morbidity rates, oral health often remains disregarded. Oral health often is considered a luxury, is ignored in health planning by most governments.[2] Hence the Basic Package of Oral Care (BPOC) was developed in collaboration with WHO in Nijmegen. The BPOC was deemed to be a means of effective, feasible and affordable oral care that would address the essential oral health needs in any community.[3]

Premise for introducing BPOC: People from low and middle-income countries that comprise of more than 70% of the world's population have very inadequate access to oral health care. India with its varied population faces the challenge of unequal distribution of health care with 700 million of its population in rural areas but only 25% of doctors practicing in semi-urban and a meager 3% in the rural parts.[4] The oral health scenario is further worsened by the fact that dentistry is considered a domain of private practice confined to urban areas. Oral health is also overlooked by policymakers and is not included as a part of Primary Health Care (PHC).

Primary Health Care philosophy was developed with an emphasis on redirecting the control and prevention of commonly occurring diseases away from healthcare based on hospitals. PHC primarily aims to provide for

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all basic preventive and curative care at a cost that the community can afford.[5] Presently basic oral health care is not included in PHC due to various factors;

a. Dentistry is commonly perceived as a specialty targeting individual care rather than a community.
b. Oral health is assigned low priority compared to general health.
c. Lack of judicious use of non-dental personnel and auxiliaries by dental professionals to address the dental needs of a community.
d. Perception that most dental treatments require sophisticated armamentarium.
e. Cost of dental is often beyond the economic means of a rural population.[6]

But oral health is found to influence the quality of life of all populations urban and rural alike. Dental caries is a common chronic disease that is on a rise in the low income countries. It accounts for loss of school days among children and missing work in adults due to unmet dental needs.[7] Even in high-income countries, oral diseases contribute to higher expenditures on treatments in comparison to other major diseases like stroke, cancer, and heart diseases.[8] Hence oral health pleads for substantial consideration in health policies of countries due to the following factors;

a. High prevalence: It is almost universal in its occurrence.
b. Effect of dental ailments: in terms of discomfort, pain, social and functional limitations caused.
c. Effect on general health.
d. Deterioration of quality of life associated with dental diseases.

Keeping these in mind, WHO and FDI (World Dental Federation) set global goals to be achieved by the year 2000. Later WHO, along with FDI and International Association for Dental Research (IADR) formulated oral health goals to be achieved by 2020. These goals required particular oral health programs targeting providing oral health care to those who need it the most.[9] This required a strategy that could use the prevailing community health structure. And also conform to with the principles of PHC i.e., an approach that was practical, scientifically sound and socially acceptable.[10]

Rationale of BPOC: A plan of action that is affordable, following the ideologies of PHC, that brought dental care within reach of disadvantaged communities. The idea is to reach all communities at costs more affordable than traditional dental health services. The BPOC comprises of;

a. Oral Urgent Treatment (OUT)
b. Affordable Fluoride Toothpaste (AFT)
c. Atraumatic Restorative Treatment (ART)

WHO suggested that every country's government could use BPOC based on the needs of its communities either with the aid of existing health care or external resources such as Non-Governmental Organisations (NGOs). (10) The use of BPOC along with oral health promotion and education could prove as a coordinated effort towards better oral health.

Components of BPOC:[2,10,11]

a. **Oral Urgent Treatment (OUT):** Based on the felt needs of a community, it is an emergency oral treatment provided on demand that differs from one community to another. OUT comprises of the following;

- Pain relief from oral causes.
- First aid treatment for relief of oral infections
- First line of treatment for oro-facial trauma
- Provision of referral services for complicated cases

Most commonly pain is the reason for dental visits. Pain from dental issues affect the quality of life, accounting for the loss of days from work and school. Hence handling of pain is one of the important aspects of BPOC. The treatments under OUT include;

- Extraction of severely damaged teeth.
- Handling of post-extraction complications such as bleeding and dry socket
- Drainage of dental abscess
- Medication for acute dental infections
- First-line for treatment for oro-facial trauma
- Referral of complicated cases

Pain is commonly from decayed teeth. Hence extraction of the affected tooth or draining of the abscess would provide the relief. 90% of decayed teeth are often left untreated and handled with prescription of medication. However, prudent prescription is advised in

lieu of increasing drug resistance of micro-organisms.[12] Oro-facial trauma is the second most common cause of availing dental treatment. Trauma involving tooth structures are more frequently seen among children and younger adults.[13] Delay in treatment of these could result in loss of vitality and root resorption. In developing countries, road traffic accidents most often cause facial trauma. Appropriate treatment at the earliest prevents further complications. A proper referral chain ensures the provision ofsuitable dental treatment. Referral for complicated cases should be done to the nearest dental facility. OUT incorporated at the sub-district level in the PHC system would make oral emergency care available to all.

b. Affordable Fluoride Toothpaste (AFT): As salt and water fluoridation is not possible in developing countries, the most feasible and effective fluoride delivery is through the use of fluoridated dentifrices. Hence it's the preferred anti-caries agent especially in rural areas. Reasons for using AFT are;

- Cost-effective and equitable means of caries prevention
- Effect of AFT is predominantly topical
- Extensive well-documented trials have proven a steady decline of caries in developing countries from DMFT of 8 to 1.5 in 12-year-olds.
- When the use of fluoride dentifrice is adequate, the diet has a lesser role to play in the prevention of caries.

Affordable fluoride toothpaste could be the most cost-effective and appropriate means of caries prevention in countries that otherwise lack access to specialized preventive care.[14] Proper packaging with information regarding the date of production and expiry is mandatory. Package should also display the fluoride compound used and its concentration. A concentration ranging between 1000-1500 ppm is recommended as, a concentration below this would notbe effective in preventing caries while higher content would increase the risks of dental fluorosis when used in children.[15] Toothpaste that meets the recommended standards could be made tax-free by the governments to encourage its widespread use.

Efficient collaboration among the manufacturers, advertising agencies, government, and dental professionals is mandatory to promote optimal use of fluoridated toothpaste. Long-term reinforcement programs at an early age are necessary to initiate use AFT and ensure it life-long use.[14] Brushing in children should be supervised by adults to minimize the chance of fluorosis. Using a pea-sized quantity of toothpaste along with making sure the tube of toothpaste lasts longer, guarantees a lesser risk of fluorosis. Brushing twice a day with fluoridated toothpaste effectively can prevent both dental caries and periodontal disease, thereby reducing the burden of dental diseases in a population.[16]

c. Atraumatic Restorative Treatment (ART): In the case that dental caries cannot be prevented, the affected tooth needs to be treated. Restoration of teeth relies on expensive electric driven equipment, thereby limiting treatment procedures to those who have access to the dental clinic. To overcome this, ART was proposed as it requires no electric equipment. ART consists of the use of hand instruments to excavate caries and restoring with material that bonds with the tooth structure. The cavity is overfilled and the excess material is then flowed to seal adjacent pits and fissures.[17]Therefore, it conforms with the concepts of preventive and restorative care. It avoids the sacrifice of healthy tooth structure and provides prevention with minimal intervention.

The survival and effectiveness of ART has been ascertained by various studies. 90% of dental caries in primary teeth and 54% in permanent teeth among a high-risk group in Syria could be treated with ART.[18] Medium strength GIC was the restorative material used. Single surface restorations were found to have of 95% - 100% one-year survival rate, whereas 2 year and 3-year survival rates are at 92% - 94% and 85% - 89% respectively. Failures of ART in the first 3 years are limited to 4-5%.[19]In primary teeth, single-surface ART restorations had a survival rate of 86% in contrast to 80% in amalgam restorations at the end of 3 years among Syrian school-going children.[18] The sealing of adjacent pits and fissures with GIC prevents dental caries and hence this fact needs to be considered while evaluating mechanical retention of restorations. It was found in children who underwent ART restorations in Zimbabwe, had four times lesser chances of developing caries.[20]

Factors favouring acceptability of ART:

- Reduced discomfort during treatment procedure:

Studies conducted have reported discomfort experienced is minimal in ART as compared to

conventional restorations where drilling is used. The discomfort was reported in only 19% undergoing ART as opposed to 36% of conventional amalgam fillings in 6-16-year-old children of Pakistan. Whereas, only meager 7% of the pre-school children in China felt discomfort while ART was performed. Hence, making it the treatment of choice in children who have limited access to dental care.[10]

- **Negligible post-operative sensitivity:** Sensitivity associated with the ART after the procedure is only 5% in Chinese adolescents and 6% of teenagers in Zimbabwe.[21,22] Therefore it can be safely said that sensitivity associated with ART is less and it can be used as acceptable form treatment of dental caries.
- **High satisfaction among patients:** 91% of Chinese and 95% of Zimbabwe secondary school students very satisfied with the operational procedure of ART and believed, that they would not mind undergoing the procedure once again.[21,22] This reinforces the fact that ART can be performed as a substitute for conventional restorations in areas with restricted access to dental treatments.

It has been found that because of the above-mentioned factors, ART works as an efficient means of treatment delivery. ART can be done through mobile dental units or the system in place for the delivery of health care. Because of its ease of sterilization and acceptability, it was observed that in a school in South Africa, the percentage of extractions came down by 17% in permanent teeth and 36% in primary teeth. It also saw an increase of 33% in restorative care, one year after administering ART.[23]The cost of ART using GIC is much less compared to that of a conventional amalgam restoration. Thus all the above-stated facts make making ART the clear choice for rendering restorative in outreach areas.

Requirement of personnel for carrying out OUT and ART: While promoting and dispensing fluoride toothpaste requires the teamwork of dentists and policymakers, the provision of emergency oral care and ART entails a team of well-trained workforce in place. This team differs from place to place based on the characteristics of the population that they will be serving, health strategies and the legislation of every country. For providing emergency oral health care under OUT, the following personnel can be utilized based on examples from different countries.

- Nurses from primary health care centers: Cambodia sourced their workforce from the PHCs. The nurses undergo a period of training for five months, after which they are employed at the district referral center until they are proficient in carrying out all the procedures included in BPOC.[24]
- Rural medical aid: In Tanzania, rural medical aids are trained for three years, after which there is dental training. They then provide relief of pain through extractions and the provision of medications.[25]
- Health assistants: Nepal, trains its health assistants to handle extended duties such as oral health education, first aid for oro-facial trauma and extractions.[26]
- Dental therapists: In countries like Vietnam, Zimbabwe, and Malawi, dental therapists are trained to provide OUT services.[10]

In the Indian scenario, dental auxiliaries such as dental hygienists and health care workers like ASHA and Anganwadi workers can be given additional training to handle dental emergency services. Also rural postings in PHCs can be made compulsory for interns of very dental college to help in rendering these services.

The personnel required for ART pose tougher challenges than those needed for OUT as, carrying out the procedure of ART requires an in-depth knowledge about dental structures and dental materials. Hence training courses of short duration are not sufficient. It was found that dental therapists, students studying to be dentists, and dentists could be efficient in ART procedures, with dentists being the most competent of them.[10]However, the decision regarding which personnel to use is the prerogative of every country and its governmental policies.

Requirement of equipment for OUT: A basic set of dental instruments and means of sterilizing them is necessary for the provision of OUT. A judgment regarding type and number of extraction forceps required has to be taken base on the local scenario. Usually, 2-4 types of extraction forceps and 1-2 types of elevators are considered sufficient. Apart from these, the following equipment is necessary;[10]

- Bed or chair with head support.
- Chair or stool for the dental personnel.
- Table for medicines and instruments.
- A source of light, preferably battery operated.

- Washbasin
- Means of storing water.
- Heat source and pressurized container for sterilizing instruments.

Requirement of equipment for ART:[17]

Equipment essential for ART are:

- Bench or chair for the patient
- Stool or chair for the operator
- Source of light
- Hand instruments - Mouth mirror
- Explorer
- Tweezer
- Excavators
- Dental hatchet
- Applier/carver
- Consumable items such as -Adhesive material, usually GIC
- Cotton for making rolls and pellets
- Petroleum jelly
- Wooden tips and matrix bands

Equipment requirements for ART have been kept to a minimum to cater to treatment without the use of electricity and sophisticated armamentarium. Thus making ART accessible and affordable even at most isolated locations.

Course of action for implementing BPOC:[2, 11, 27]

1. Identifying a local partner: Having a local body to aid in the identification of the specific needs of the population, providing support for planning and implementation of BPOC would make the process easier and hassle-free.
2. Gaining decision maker's approval: Involving the policymakers from the level of Ministry of Health right from the outset and their consent at every stage is essential for the successful execution of the program.
3. Involvement of other possibly interested parties: Participation of NGOs and other local political, medical and educational systems would give the necessary boost for the program in the form of funds and required manpower.
4. An in-depth comprehension of the local situation: The program must be based on the needs and expectations of the community that it is catering to. Various factors such as the oral health status of the community, their perceived and normative needs, awareness and habits related to oral health, financial and manpower resources influence the operation of the program.

How can BPOC put into action in India?

1. Involvement of NGOs: There is a surge of non-governmental organizations that are aware of their social responsibilities and are financially transparent. Their support can be the boost required for initiating and supporting BPOC implementation. However, certain factors need to be considered such as the extent of organization management, quality control and accountability of the organizations, limited financial resources and problems regarding integrating these personnel into the existing communityhealth care system.[6]
2. Integration with health workers from PHC: India has a competent system of primary health care in place efficiently catering to the health needs of the communities in rural areas. Health workers in this set up can be trained to deliver emergency dental health services. Oral health care needs to be integrated at all three levels; Macro-level (health system), Meso-level (Organisational system – by meansof inter-organizational relationships) and Micro-level (coordination at a personal level). Integration must be both horizontal and vertical for a capable incorporation. (28) The non-dental workforce that is available in the form of teachers and community health workers can be used to provide a range of dental services ranging from emergency care to prescription of medication and promoting the use of fluoride toothpaste. These personnel can also be used to generate a competent network of referral systems by creating a pathway for referral of complicated cases to nearby dental setups.[3]
3. Responsibility of local dentists: Dentists from the nearest localities can volunteer to meet the dental needs of an outreach facility individually or in partnership with an NGO. Dentists could also help the training of local health care workers in providing BPOC.

4. Role of dental institutions: Institutions can take up the responsibility to address the treatment needs of rural communities without access to dental care. This can be further facilitated by incorporating BPOC as a part of the dental curriculum. Studies evaluating awareness regarding BPOC among dental students found poor knowledge.[9,29] Hence steps to make them proficient in services provided under BPOC and then posting them to these areas could help in rendering dental care. Conducting workshops for training of local PHC workers such as ASHA and Anganwadi workers in BPOC could also be undertaken by dental institutions to makethe local community self-reliant.

5. Partnership between Public and Private sectors: Collaboration between local communities and governmental institutions have been purported to be the most important area to work on to increase access and affordability to dental care. The advantages of both these sectors can be combined to work complementary to each other. Areas such as conducting awareness programs, provision of manpower through outsourcing could be done to work in the best interests of both sectors.

Conclusion

Since oral health is important for general health and wellbeing, BPOC provides the best way of reaching the unreached at a cost that communities can afford throughout every stage of their development. The burden of oral health care in the communities can be addressed through proper implementation of BPOC. Oral health promotion is thought to be effective when both upstream and downstream interventions work complimentarily.[30] BPOC can act as a primary source for preventive and curative treatments which are a part of the downstream approach, this combined with upstream interventions such as health education could be the answer to tackling oral health problems competently in the communities.

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