Review Article

Dental public health in India: An insight

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Abstract

Oral diseases are a major public health problem, and their burden is on increase in many low- and middle-income countries. Dental public health (DPH) aims to improve the oral health of the population through preventive and curative services. However, its achievements in India are being questioned probably because of lack of proficiency and skill among DPH personnel. The literature search for the present study was conducted utilizing various search engines and electronic databases such as PubMed and MEDLINE. Documents related to the Central and State Governments of India were also considered. Finally, 26 articles were selected for the present study from which relevant information can be extracted. The present study focuses on some of the important aspects relating to DPH in India such as priority for oral health, DPH workforce and curriculum, utilization of DPH personnel in providing primary oral health care, role of mobile dental vans, and research in DPH. It was concluded that more attention should be given toward preventive oral health care by employing more number of public health dentists in public sector, strengthening DPH education and research, and combining oral health programs with general health-care programs.

Keywords: Dental public health, dental tourism, mobile dentistry, primary care, research

Introduction

Over the past few decades, health in India is gaining less importance, and oral health, the least.[1] Oral diseases are still a burden for developing countries such as India, especially among the rural masses.[2] Prevalence of oral diseases is very high in India with dental caries (50%, 52.5%, 61.4%, 79.2%, and 84.7% in 5, 12, 15, 35–44, and 65–74 years old, respectively) and periodontal diseases (55.4%, 89.2%, and 79.4% in 12, 35–44, and 65–74 years old, respectively) as the two most common oral diseases.[3] It is well documented that there is an association of oral health with various systemic conditions such as diabetes, cardiovascular disorders, pregnancy, and its impact on quality of life.[4,5] Orofacial pain and loss of sensorimotor functions limit food choices and the pleasures of eating, restrict social contact, and inhibit intimacy.[6]

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The main role of public health dentistry is to understand the distribution and determinants of oral diseases and to educate, motivate, and promote oral health in diverse populations. Over the past decades, research and practice in dental public health (DPH) have been concentrated upon the two major problems – dental caries and periodontal disease.[7] According to estimates, about 50% of school children are suffering from dental caries and more than 90% of adults have periodontal diseases.[8] This increase in prevalence of dental diseases is observed parallel to the rapid nutrition transition in the recent decades and may also be one of its consequences.[9,10] Furthermore, India is called as the "oral cancer capital" of the world attributed to its high intake of both smoked and smokeless tobacco products, strongly associated with oral neoplasms.[11] Most of these highly prevalent oral diseases are largely preventable and can be reduced through various health promotion and preventive measures.[12]

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Over the past 15–20 years, the context of DPH programs has been rapidly changing in India. As a result, scope and content of dental programs have also changed. The public dental health professional, with his/her understanding of dental problems and his/her competence in dealing with community affairs, can be a decisive influence in the development of health programs which are the best interests of both the public and the dental profession.[13] Even though the specialty has been doing its bit in improving the oral health situation since its inception, in the year 1969, there has been little to say about the achievements in India.[1,14]

Therefore, the present study was undertaken to review and analyze the current scenario of public health dentistry in India keeping in view the production, employment, and distributional patterns of public health dentists in India. The study also focused on role of dental tourism in promoting public health, conduct of mobile dental van (MDV) programs in various institutions, and status of research in DPH.

Methods

Data search for the present review was done both electronically as well as manually. Government agencies such as Dental Council of India (DCI) and Ministry of Health and Family Welfare were also consulted to get relevant data. Electronic search was conducted using databases such as PubMed and MEDLINE and articles published in peer-reviewed journals. Web-based search engines such as Google Scholar were also used to extract relevant articles using various keywords and their combinations. We found "dental public health," "public health programme," "dental manpower" as relevant keywords and were entered into Medical Subject Headings (MeSH) controlled vocabulary. The terms such as public health, dental, India, and programs were combined with the MeSH terms by Boolean "AND" or "OR" and entered in both PubMed and Google Scholar. More information on the topic was also gathered from PGIMER, Library, Chandigarh. The collected documents included original articles, reviews, editorials, guest editorials, letters to editor, interviews, short reports, and short communications. Some data were also obtained by cross-checking the reference lists of the articles accessed. Studies that were not published in English language were excluded from the study. A total of 38 articles were obtained during initial search which was conducted keeping in view the papers published in the last few decades. However, after scrutinizing all data, only 26 relevant articles were included in the final analysis.

Dental Public Health Workforce

The present trend in public health dentistry manpower is the increasing concern about the professional manpower. Table 1 shows that there is interstate inequality among public health dentists in India.[15] The present data also show that there are a total of 5014 positions available for entering postgraduate training in dentistry in India in all the nine branches. Out of this, only 185 (3.68%) positions are available for postgraduate course in public health dentistry, which is least in all branches;[16,17] whereas in a country like India where the majority of the population resides in the rural areas, there is greater need for these specialists. However, at present, there is no policy for trained public health dentists to strictly serve the rural population. A study was conducted to know the attitudes of dental students toward choosing public health dentistry as their future career and it was found that 58% of subjects were interested in joining this dental specialty.[18]

Table 1: State-wise distribution of public health dentists in the country

State	Number of dental institutions	Number of available public health dentists
Andhra Pradesh	22	50
Assam	1	0
Bihar	7	5
Daman and Diu	1	1
Chandigarh	1	2
Chhattisgarh	6	3
Delhi	4	6
Goa	1	2
Gujarat	13	13
Haryana	12	25
Himachal Pradesh	5	4
Jammu and Kashmir	3	0
Jharkhand	3	0
Karnataka	45	143
Kerala	23	14
Madhya Pradesh	16	20
Maharashtra	35	28
Orissa	5	7
Pondicherry	3	5
Punjab	16	15
Rajasthan	15	35
Tamil Nadu	29	50
Uttar Pradesh	33	72
Uttaranchal	2	0
West Bengal	5	2
Total	306	296
Outside the institution		117
Total public health dentists		413

As per records of Indian Association of Public Health Dentistry, 2014-2015

Public health dentistry departments in the country are not rooted in the community, rather confined to hospitals.[19] This department has been used only to increase the number of patients to dental colleges to fulfill the minimum outpatient department requirement according to the DCI norms. It is seen as an advertisement agency for these colleges. Role of public health dentist has become that of a referring body. All these factors force people to seek dental care at private centers.[20]

Some of the authors are of the opinion that majority of the dental institutions in the country, especially private ones, are being run for monetary gains.[21] The management is not concerned

with the health of the community as a whole. Dental checkup and treatment camps in most parts of the country do a little benefit for the community. Therefore, patients' attendance during these camps falls with time as they become aware that only referrals are being made.[21] The government has not properly executed the oral health policy, a change that could have led to improvement in the differences in health status of urban and rural population.[1]

Primary Oral Healthcare

Primary oral healthcare, without any barrier, is still missing across several countries across the world primarily in low- and middle-income countries such as India.[22] Majority of the public (government) dental health-care setups are poorly equipped, understaffed, and oral health is not a priority in budgetary allocations. Not even 20% of the rural primary healthcare centers (PHCs) around the country have a dentist or a DPH professional. The government's goal of appointing a public health dentist at every community health center (CHC) looks like a distant dream as government is struggling to ascertain CHCs and as half of the CHCs are not functional.[1,23] The energies, talent, and precious time of public health dentists posted in PHCs and CHCs with limited dental materials are underutilized in some states. The CHC should be available for emergency care as well as dental care.

Underutilization of Internship Program

Nowadays, majority of fresh dental graduates are unable to perceive the importance of community oral health and they are not aware of their responsibilities toward the society. This is because the internship program is underutilized by the dental institutions for services at the grass root level and dental health needs of our geriatric population are overlooked.[8] Organized school dental health programs are lacking so that children may learn right oral practices from the beginning and made aware regarding harmful effects of substance abuse. Moreover, faster growing population of our country, rapid westernization, and lack of resources are increasing the burden of dental disease. Tobacco abuse is further causing menace for not only the poor and disadvantaged but also civilized population. Early initiation of tobacco habits is the cause of increased morbidity in younger generations.[24]

Self-medication for Dental Conditions

Self-medication is a universal phenomenon which is practiced globally with a varied frequency of up to 68% in European countries and with a prevalence rates of 31–60% in the Indian subcontinent.[25] In India, retail drug stores remain the most important medium of distribution with an extensive customer outreach. Nowadays, in India, it is common practice that patient may choose the varied range of practices, therapies, and treatments. It has been reported that majority of the people did not know what medications they are taking.[8] The main reasons for self-medication include higher cost of dental treatment, long queues in the hospital, and lack of access to dental services.[26,27] The health hazards due to dental self-medication cannot be overlooked since many people do not view their practices as self-medication.

Improving Oral Health through Mobile Dentistry

The introduction of mobile clinics into public health dentistry dates back to 1924.[28] They have been successfully used to provide dental treatment to schools, disabled patients, rural communities, industries, and armed forces of various countries. They may offer a viable option to address the issues of oral health-care delivery for an extensive underserved population in a developing country like India with scarce resources. Currently, MDVs are used for community training and rural posting for dental interns and postgraduates of the Department of Public Health Dentistry in India.[29] However, in some of the institutions, MDVs are predominantly used for curative services rather than preventive. Personnel with no qualification or training perform duties of chair-side assistant and peon in community programs. There should be active participation of postgraduates and staff of public health dentistry department during any outreach program. Preventive services such as fissure sealants and fluoride application should also be available during dental camps. MDV programs operational in postgraduate institutions have to rectify shortcomings regarding the facilities and manpower to improve the efficiency.

Dental Tourism and Public Health

In the true sense, "Dental Tourism" implies to those individuals who travel from their area of residence to another location to avail dental services.[30] Indian dental market is showing a gradual increasing trend toward dental tourism. Dental tourism provides the possibility of both helping and hindering public health causes. On the one hand, procedures may become more accessible for those who cannot afford them or who live in an area where they are not available. On the other hand, dental tourism may be limiting the availability of providers as they perform procedures more profitably for out-of-town visitors, whom they can charge more. Because of the current lack of empirical research, we do not know if this is a positive or negative contribution to society. The data on dental tourism are sparse, and, hopefully, given the growing dental tourism market, the incentive to engage in such research will also grow.[30]

Research and Programs on Dental Public Health

Research in the field of dentistry is progressing at mightier speed worldwide. The situation of dental research in India is still in the nascent stage even though we have more than 300 dental colleges in India, which are more than any number as compared to other countries.[31] However, the representation of India toward DPH research on the international platform is negligible.[32] The newer opportunities in DPH research are epidemiological studies for the development of vaccines to prevent oral diseases, salivary proteomics in screening of oral cancers, epigenetics,

oral health literacy, role of dentists in disaster management, and problem-based learning.[33] Moreover, it has been suggested that there is a need for more schools of public health, DPH residencies, and dental hygiene programs; oral epidemiologists and health services researchers; health educators; and specialists in utilization review/outcomes assessment, dental informatics, nutrition, program evaluation, and prevention.[34] Other subjects relating to DPH such as fluoridation of drinking water and commercial mouthwashes have also been a cause for concern, with some studies linking them to an increased risk of oral cancer being taken a back seat as it has not been possible to establish a causal relationship between the use of alcohol-containing mouthwashes and the development of oral cancer.[35] The maximum permissible limit of fluoride in drinking water in India is 1.2 mg/L.

There are programs on tobacco awareness, but its use in India does not show significant decline in users. The Government enacted the Cigarettes Act (Regulation of Production, Supply and Distribution) in 1975.[36] However, it failed to accomplish much because it was not comprehensive in its coverage and was feeble in its provisions. Tobacco smoking was prohibited in all health-care establishments, educational institutions, domestic flights, air-conditioned coaches in trains and suburban trains, and air-conditioned buses, through a Memorandum issued by the Cabinet Secretariat in 1990.[36] Since these were mainly Government or administrative orders, they lacked the power of a legal instrument. The Government enacted the Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act (COTPA) in 2003.[37] There were many legal challenges which the government had to face in view of the tobacco industry countering most of these rules in the court of law. However, after a long legal battle and interventions by the civil society, revised smoke-free rules came into effect on October 2, 2008.[38] During 2001–2002, a series of 13 tobacco cessation clinics was set up in 12 states across the country in diverse settings such as cancer treatment hospitals, psychiatric hospitals, medical colleges, nongovernmental organizations, and community settings to help users to quit tobacco use.[39] This network of tobacco cessation clinics was further expanded in 2005 to cover five new clinics in regional cancer centers in five states of which two centers were in the northeastern states of Mizoram and Assam, having high prevalence of tobacco use. The tobacco cessation clinics were renamed as tobacco cessation centers, and their role was expanded to include training on cessation and developing awareness generation on tobacco cessation.

National Tobacco Control Programme

To strengthen implementation of the tobacco control provisions under COTPA and policies of tobacco control mandated under the World Health Organization Framework Convention on Tobacco Control, the Government of the India piloted National Tobacco Control Programme (NTCP) in 2007–2008.[40] The program is under implementation in 21 out of 35 states/union territories in the country. In total, 42 districts are covered by NTCP at present. The internal monitoring of implementation of COTPA in 21 states, where the NTCP is under implementation has revealed that only about half of the states (52%) have mechanisms for monitoring provisions under the law. Although 15 states have established challenging mechanism for enforcement of smoke-free rules, only 11 states collected fines for violations of bans on smoking in public places. Similarly, a steering committee for implementation of section-5 (ban on tobacco advertisements, promotion, and sponsorship) has been constituted in 21 states, but only three states collected fines for the violation of this provision. Similarly, enforcement of a ban on the sale of tobacco products to minors and bans on the sale of tobacco products within 100 yards of educational institutions also remains largely ineffective in many states.[40]

On a positive note, the country has also witnessed examples of community-level initiatives for tobacco control, for example, tobacco-free villages and educational institutions being reported from many states. Even before the revised smoke-free rules came into effect, Chandigarh was the first city to be declared smoke-free in 2007. This is an excellent example of partnership of state administration and civil society for tobacco control in the country. Sikkim was the first state in the country to be declared smoke-free in 2010. Steps have been taken to incorporate tobacco control in the curriculum of undergraduate medical and dental curriculum to equip medical and dental graduates with skills for tobacco control, especially tobacco cessation.[36]

Conclusion

The rapid growth of dental professionals has not helped the public health system as a whole. Moreover, a major imbalance exists in the distribution of public health dentists across different states. There is a need to broaden the scope of this specialty and to make it more practical. Proper orientation on this subspecialty of dentistry from the under graduation level is the need of the hour. More public health dentists should be recruited in the government/public sector to raise awareness regarding oral health problems. Utilization of MDV is indispensable for the treatment camps, but preventive services should also be given importance. DPH education programs should be implemented on a priority basis to make people aware of the dangers of self-medication. There should be inclusion of dental health programs with family welfare programs by the government like in other developed countries. Political, social, organizational (both government and nongovernmental), professional dedication and support are needed to make oral health of this country comparable with general health.

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Conflicts of interest

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References

1. Kothia NR, Bommireddy VS, Devaki T, Vinnakota NR, Ravoori S, Sanikommu S, *et al.* Assessment of the status

of national oral health policy in India. Int J Health Policy Manag 2015;4:575-81.
2. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. Bull World Health Organ 2005;83:661-9.
3. Bali RK, Mathur VB, Talwar PP, Chanana HB. National Oral Health Survey and Fluoride Mapping, 2002-2003, India. Delhi: Dental Council of India; 2004.
4. Holmlund A, Holm G, Lind L. Severity of periodontal disease and number of remaining teeth are related to the prevalence of myocardial infarction and hypertension in a study based on 4,254 subjects. J Periodontol 2006;77:1173-8.
5. Joshipura K. The relationship between oral conditions and ischemic stroke and peripheral vascular disease. J Am Dent Assoc 2002;133Suppl:23S-30S.
6. Watt RG. Strategies and approaches in oral disease prevention and health promotion. Bull World Health Organ 2005;83:711-8.
7. Fulton JT, Blackerby PE Jr., Russell AL. Trends in public health dentistry; dental health section. Am J Public Health Nations Health 1956;46:353-6.
8. Kishor NK. Public health implications of oral health-inequity in India. J Adv Dent Res 2010;1:1-10.
9. Shetty PS. Nutrition transition in India. Public Health Nutr 2002;5:175-82.
10. Shah N, Pandey R, Duggal R, Mathur U, Kumar R. Oral Health Survey in India: A Report of Multicentric Study, WHO – Oral Health Survey 2004. Geneva, Switzerland: World Health Organization; 2005.
11. GATS. Global Adult Tobacco Survey (GATS) India Report 2009-2010. India: Ministry of Health and Family Welfare; 2010.
12. Nakre PD, Harikiran AG. Effectiveness of oral health education programs: A systematic review. J Int Soc Prev Community Dent 2013;3:103-15.
13. Mathur MR, Singh A, Watt R. Addressing inequalities in oral health in India: Need for skill mix in the dental workforce. J Family Med Prim Care 2015;4:200-2.
14. Mohamed S, Joseph J. Public health dentistry education program in India. Indian J Public Health 2014;58:206.
15. Halappa M, Naveen BH, Kumar S, Sreenivasa H. SWOT Analysis of Dental Health Workforce in India: A Dental alarm. J Clin Diagn Res 2014;8:ZE03-5.
16. Jaiswal AK, Srinivas P, Suresh S. Dental manpower in India: Changing trends since 1920. Int Dent J 2014;64:213-8.
17. Dental Council of India. College Details. Available from: http://www.dciindia.org/search.aspx. [Last accessed on 2016 Feb 11].
18. Naidu GM, Prasad GM, Kandregula CR, Babburi S, Kvnr P. Choosing public health dentistry as a career: A cross-sectional study. J Clin Diagn Res 2014;8:199-202.
19. Pandve HT. Recent advances in oral health care in India. Indian J Dent Res 2009;20:129-30.
20. Vundavalli S. Dental manpower planning in India: Current scenario and future projections for the year 2020. Int Dent J 2014;64:62-7.
21. Singh A, Bharathi PM. Dental public health! A mistaken identity. Adv Life Sci Appl 2012;1:58-61.
22. Tandon S. Challenges to the oral health workforce in India. J Dent Educ 2004;68 7 Suppl: 28-33.
23. Lal S, Paul D, Vashisht BM. National oral health care programme (NOHCP) implementation strategies. Indian J Community Med 2004;29:3-10.
24. Hedman E, Riis U, Gabre P. The impact of behavioural interventions on young people's attitudes toward tobacco use. Oral Health Prev Dent 2010;8:23-32.
25. Deshpande SG, Tiwari R. Self medication – A growing concern. Indian J Med Sci 1997;51:93-6.
26. Simon AK, Rao A, Rajesh G, Shenoy R, Pai MB. Trends in self-medication for dental conditions among patients attending oral health outreach programs in coastal Karnataka, India. Indian J Pharmacol 2015;47:524-9.
27. Baig QA, Muzaffar D, Afaq A, Bilal S, Iqbal N. Prevalence of self-medication among dental patients. Pak Oral Dent J 2012;32:292-5.
28. Rudolph MJ, Chikte UM, Lewis HA. A mobile dental system in Southern Africa. J Public Health Dent 1992;52:59-63.
29. Sandesh N, Nagarajappa R, Hussain SA, Ramesh G, Singla A, Prabhusankar K. Utilization of mobile dental vans at post graduate dental institutions in India. Oral Health Dent Manag 2014;13:20-6.
30. Vequist DG 4th, Stackpole I. Dental tourism: An opportunity for public health. Interview by Lois K Cohen. Compend Contin Educ Dent 2012;33:90, 92-3.
31. Bishen KA, Chhabra KG, Sagari S, Gupta P. Nationwide survey on barriers for dental research in India. J Pharm Bioallied Sci 2015;7:201-6.
32. Sivapathasundharam B. Research career in dentistry. Indian J Dent Res 2009;20:255.
33. Balaji SM. Dental research: Present to future. Indian J Dent Res 2013;24:651-2.
34. Shulman JD, Niessen LC, Kress GC Jr., DeSpain B, Duffy R. Dental public health for the 21st century: Implications for specialty education and practice. J Public Health Dent 1998;58 Suppl 1:75-83.
35. Carretero Peláez MA, Esparza Gómez GC, Figuero Ruiz E, Cerero Lapiedra R. Alcohol-containing mouthwashes and oral cancer. Critical analysis of literature. Med Oral 2004;9:120-3.
36. Kaur J, Jain DC. Tobacco control policies in India: Implementation and challenges. Indian J Public Health 2011;55:220-7.
37. The Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003; an Act Enacted by the Parliament of Republic of India by Notification in the Official Gazette. (Act 32 of 2003); 2003.
38. Revised Smoke Free Rules. Notification in the Official Gazette GSR 417 (E) Dated, 30th May, 2008.
39. Government of India. Ministry of Health and Family Welfare. Directorate General of Health Services. National Tobacco Control Programme. Handbook: Comparative Analysis of FCTC and Indian Laws Relating Tobacco. Available from: http://www.whoindia.org/EN/Section20/Section251686.html. [Last accessed on 2016 Jun 24].
40. Government of India. National Tobacco Control Programme, 2007-08. Available from: http://www.mohfw.nic.in. [Last accessed on 2016 Jun 24].