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Review Article

Dentistry Section

SWOT Analysis of Dental Health Workforce in India: A Dental alarm

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ABSTRACT

Context: India faces an acute shortage of health personnel. Together with inequalities in distribution of health workers, dental health workers also become a part contributing to it impeding the progress towards achievement of the Millennium Development Goals. **Aim**: To assess dental health-workforce distribution, identify inequalities in dental health-workers provision and report the impact of this mal distribution in India. **Materials and Methods**: Situational analysis done by using the primary data from the records of Dental Council of India. **Results**: In India, 0.088% of dental health worker per 1000 population exists. Inequalities in the distribution of dentists exist in India. Certain states are experiencing an acute shortage of dental health personnel whereas certain cities are over fledged with dentists like Karnataka, Maharastra, Tamilnadu being states with high concentration & Jharkhand, Rajasthan, Uttaranchal being the least. **Conclusion:** Although the production of health workers has expanded greatly in recent years by increase in number of dental colleges the problems of imbalances in their distribution persist. In the race of increasing dentist population ratio in total, inequitable distribution of appropriately trained, motivated and supported dentists gives a mere feel of saturation in jobs making youngsters to not to choose dentistry as a career giving an alarm.

Keywords: Availability, Distribution, Dentists, Inequalities, Production

INTRODUCTION

In developing countries, health workers play a central role in providing the appropriate management of all aspects of the health system despite the availability of effective interventions for many health problems [1]. India is a conglomeration of states with diverse levels of socioeconomic status, governance, health systems and health situations. As elsewhere, India also has shortages and mal distribution within its health workforce that have contributed to inequities in health outcomes [2]. India's health workforce is a combination of both registered, formal healthcare providers and informal practitioners, the latter being the first point of contact for a large proportion of the population [2,3]. Added to it, Oral health policy in India is still in an Infant stage finding its way among the general health sector.

According to the 2006, World Health Report, India had 0.60% doctors, 0.80% nurses, 0.47% midwives, 0.06% dentists and 0.56% pharmacists respectively per 1000 population indicating acute shortage of dentists [4].

In addition to the known shortage, there is a common perception that large in-country inequalities exist in their distribution [2]. There have been efforts to increase the health workforce production to meet demand. However, these efforts have been hampered by increases in factors such as population size, purchasing power for health services within communities, life expectancy and the prevalence of non communicable diseases and other chronic conditions [1]. To date, the evidence to support this proposition has been limited, owing to a lack of reliable disaggregated data at the country & state level [2].

Situational Analysis

Data regarding dental surgeons registered with the central/ state dental councils was obtained from the Indian Ministry of Statistics and Programme Implementation's 2011 report on Health and Family Welfare [5]. In addition, national and state data on the number of dental educational institutions as well as the number of admitted students were extracted from the Dental Council of India (DCI) databases [6]. Data regarding Public health dentists were obtained from the Indian Association of Public Health Dentistry information centre. Densities of health workers were calculated from the workforce data described above and census data on populations [2,7].

Dental health worker availability

[Table/Fig-1] shows the absolute numbers and category-wise density (per 1000 population) of dentists at national and state levels. In 2009, India had 104603 dentists. There were gross inequalities in the availability of these health workers at the sub national level.

Dental health work force production

Review of the available data from [Table/Fig-2] on training dental students highlights three important developments. First is the recent rapid expansion in the training capacity of dentists. Between 1991 and 2013, the number of admissions to dental institutions expanded from 3100 to 23 800, i.e. by 66.8%[6]. There were clear inequalities in the distribution of these training institutions among states. Although the Empowered Action Group states account for almost half of the country's population, they house approximately a quarter of the dental institutes [2].

Second, there has been a notable increase in the private sector's involvement in Dental education. Before 1991, there were only 49 dental colleges, of which 23 (47%) were government owned. As of 2013, 246 new dental institutions recognized or approved by the DCI have been added to the existing list, of which almost all (229) are in the private sector [2,6]. Third, despite the consistent increase in dentist's production, posts in public health sectors/government are still questionable.

Distribution of dentists

Intra state differences in dentist's availability, which may be associated with the urban-rural divide and corresponding economic disparities, could not be assessed owing to lack of access to district-level data. But, we could get data of public health dentist's distribution state wise for assessment. [Table/Fig-3] shows an inter-state inequality among public health dentists from the data.

There was a positive correlation between the number of dental institutions and density of dentists (Spearman's rho=0.353; p=0.116), implying that the scarcity of dentists in other areas.

DISCUSSION

As India strives to achieve universal health coverage, improvement in oral health care delivery with skilled and motivated dental health

States	Population (per million)[a]	Health worker numbers	Health worker density per 1000 population
Andhra Pradesh	83.11	6510	0.078
North east	49.84	944	0.019
Madhya Pradesh	70.28	2002	0.028
Bihar	100.94	2807	0.028
Chattisgarh	24.85	407	0.016
Goa	1.37	687	0.503
Gujrat	58.76	2684	0.046
Haryana	24.51	2059	0.084
Himachal Pradesh	6.72	772	0.115
Jammu Kashmir	12.22	1090	0.089
Jharkhand	32.06	NA	NA
Karnataka	59.86	25612	0.428
Kerala	32.90	6655	0.202
Maharastra	109.27	18159	0.166
Orissa	41.20	537	0.013
Punjab	27.07	7348	0.271
Rajasthan	66.42	364	0.005
Tamil nadu	71.20	11609	0.163
Uttar Pradesh	192.62	5572	0.029
West Bengal	89.65	2054	0.023
Uttaranchal	9.82	451	0.046
Delhi	15.83	6280	0.397
India	1183.56	104603	0.088

[Table/Fig-1]: State wise availability of dentists – 2009 [2]
a - Population data and health-professional statistics for 2009

States	No of institutions [a]		Annual production capacity	
	Government	Private [d]	Government	Private [d]
Andhra Pradesh	3	17	180	1510
North east[b]	2	0	90	0
Madhya Pradesh	1	14	40	1320
Bihar	1	5	40	280
Chhattisgarh	1	5	100	500
Goa	1	0	40	0
Gujarat	2	12	140	1090
Haryana	1	9	60	840
Himachal Pradesh	1	3	60	220
Jammu Kashmir	2	1	100	100
Jharkhand	0	3	0	250
Karnataka	2	43	110	2990
Kerala	3	20	120	1150
Maharashtra	4	31	240	2760
Orissa	1	4	20	360
Punjab	2	14	80	1210
Rajasthan	1	13	40	1210
Tamil nadu	1	28	100	2570
Uttar Pradesh	3	27	130	2650
West Bengal	3	1	220	100
Uttaranchal	0	2	0	200
Delhi	3	0	140	0
Union territories[c]	2	3	140	300
India	40	255	2190	21610

[Table/Fig-2]: State wise production capacity of dentists – 2013 [2]
a Includes only recognized, approved or permitted institutes; b Includes Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Arunachal Pradesh and Sikkim; c Includes Chandigarh, Puducherry, Daman and Diu, Lakshwadeep, Andaman and Nicobar and Dadar Nagar Haveli; d includes societies, trusts, municipal corporations. Universities and private enterprises.
Source: Dental Council of India, 2012

workforce is necessary. Human resource shortages hinder scale up of health services and limit the capacity to absorb additional financial resources [8]. A clear understanding of the dental health-workforce situation is very critical to develop effective policies. And such an effort to draft or recommend the policy still striving to show the importance of oral health in the main stream and failed to correct the increasing mal distribution of the workforce [9].

STRENGTH

In the past two decades, there has been drastic progress in increasing the training capacity [9,10]. This review shows that key finding regarding workforce production is the increase in training capacity because of the growth in private sector involvement in dental education. This trend seems likely to increase, since incentives and regulation relaxations have been introduced to encourage private investment in dental education.

WEAKNESS

The primary data used in this review are the numbers of dental health personnel registered with the Dental Council of India & Dental Public Health Association and therefore have several limitations. These councils do not maintain live registers, except for doctors in Delhi. The information they provide may be inaccurate owing to non adjustment for deaths, migrations and retirements, or double counting of workers registered in more than one state. Furthermore, not all state councils follow the same procedure for registration, which may compromise direct comparisons. Data for dentists in some states (e.g. north-east India) are not available because there is no state-specific professional councils [7].

In spite of these limitations, this review is an attempt to highlight some key issues that the Government of India and development partners should consider when addressing the health human resource crisis. There is gross inadequacy in availability of the current stock of dentists [9-11] & public health dentist's and significant inequalities in their distribution between the different states. Poorly performing states, in terms of health outcomes, have a greater shortfall in the number of dentists.

Opportunity: These shortages highlight the need to develop and implement high quality, evidence-based workforce plans, especially in the poorest and most fragile states. Similar to ROME (Reorientation of Medical Education), measures can be taken to utilize, motivate existing interns to work in the rural setting by adopting PHCs where it is not started and where it is functioning re-strengthening the centres by functional measures can be done [9].

THREATS

1. Privatization of dental education has helped to overcome the shortcomings resulting from inadequate expansion of the training capacity in the public sector, but also raised questions on the quality of dental training. An example was an initiative to standardize the quality of medical & dental education by MCI's decision to introduce a single National Eligibility and Entrance Test for undergraduate admissions at all government and private dental colleges. This test has not yet been implemented and there is scepticism as to how it might be transparently and fairly applied to the 800,000 students who would take the test each year [2,12].
2. The gross inequality in the distribution of the training institutes among the different states. These institutes are primarily clustered in states with high GDPs, where the issues related to shortages of dentists are relatively less acute.
3. Increased mismatch between dentists production and job opportunity in government hospitals/public health sector. This finding suggests that increases in the production and overall supply of dental graduates will not necessarily address the public sector shortages. Other strategies will need to be

Sl No	State	Dental Institutions	Number of available Public Health Dentists
1	Andhra Pradesh	22	50
2	Assam	1	0
3	Bihar	7	5
4	Daman & Diu	1	1
5	Chandigarh	1	0
6	Chhatisgarh	6	3
7	Delhi	4	6
8	Goa	1	2
9	Gujarat	13	13
10	Haryana	12	25
11	Himachal Pradesh	5	4
12	Jammu & Kashmir	3	0
13	Jharkhand	3	0
14	Karnataka	45	143
15	Kerala	23	14
16	Madhya Pradesh	16	20
17	Maharastra	35	28
18	Orissa	5	7
19	Pondicherry	3	5
20	Punjab	16	15
21	Rajasthan	15	35
22	Tamilnadu	29	50
23	Uttar Pradesh	33	72
24	Uttaranchal	2	0
25	West Bengal	5	2
Total		306	294
Outside the institution			117
Total Public Health Dentists[a]			618

[Table/Fig-3]: State wise distribution of Public Health Dentists, *As per the records of Indian Association of Public Health Dentists, 2013-14.*

introduced to encourage dental health workers to serve in the public sector.

4. Immigration & migration of dentists, changing disease pattern & treatment needs along with numerous challenges for expanding oral health care in India. The biggest challenge is the need for dental health planners with relevant qualifications and training in public health dentistry. There is a serious lack of authentic and valid data for assessment of community demands, as well as the lack of an organized system for monitoring oral health care services need to guide planners [10].

CONCLUSION

While production of dental health workers in India has increased in recent years, it is at the cost of increased privatization of dental education. The rapid growth in the production of dentists has not helped to address the public health system. Further, the problems of imbalances in the distribution of these health personnel persist, with certain states remaining at a disadvantage. These findings suggest that mere increase in production is unlikely to resolve the issues related to dental health worker availability & distribution.

RECOMMENDATION

Growth of private sector in increasing the training of dental workforce cannot be ruled out but a proper needs assessment has to be done or else a mere feel of saturation in jobs may make youngsters to not to choose dentistry as a career. Hence, it requires a proper planning for a policy to provide oral health for all. Human resource planning and utilization should be based on the aim for sustained development along with a system of monitoring and evaluation of programs.

A recent symposium held on implementation of oral health policy action plan - phase I in Mangalore, Karnataka recommended including Public health dentists in every district planning committee to do the needs assessment & provide primary health care [13]. Hence, it becomes important for a public health dentist to know the availability & distribution of the dental health workforce and to address the existing inequality. The problem of unequal distribution cannot be addressed without a political will. Hence, a sustained and innovative action to address India's current dental health workforce crisis is further recommended.

KEY MESSAGES

Production of Dental Graduates & Post Graduates in all the specialities are increasing and it is observed that many are facing the job problems & a recent report in Times of India stated seats in many dental colleges are not filled. But the scenario on national level is different and shows uneven distribution of Dental Health Workforce. India as such lacks a national oral health policy. Hence, this situational analysis can be utilized by policy makers in order to overcome the gap.

REFERENCES

[1] Joint Learning Initiative: Human Resources for Health: Overcoming the Crisis. Cambridge: Harvard University Press; 2004. Available from: www.who.int/hrh/documents/JLi_hrh_report.pdf. [Accessed on 2013 April 20].
[2] Indrajit Hazarika. Health workforce in India: assessment of availability, production and distribution. *WHO south east asia journal of public health.* 2013;2(2):106-12.
[3] Rao M, Rao KD, Shiva Kumar AK, Chatterjee M, Sundararaman T. Human resources for health in India. *Lancet.* 2011;377:587-98.
[4] World Health Organization. The world health report 2006 – Working together for health. Geneva, World Health Organization. 2006. Available from: www.who.int/whr/2006/whr06_en.pdf. [Accessed on 2013 April 25].
[5] Ministry of Statistics and Programme Implementation. India Statistics. Available from: http://mospi.nic.in/Mospi_New/site/India_Statistics. aspx?status=1 and menu_id=14 [Accessed on 2013 April 20].
[6] Dental Council of India. Available from: http://www.dciindia.org/ [Accessed on 2013 May 23].
[7] Anand S, Fan VY, Zhang J, Zhang L, Ke Y, Dong Z, et al. China's human resources for health: Quantity, quality, and distribution. *Lancet.* 2008;372:1774-81.
[8] Anand S, Bärnighausen T. Human resources and health outcomes: cross country econometric study. *Lancet.* 2004;364:1603-09.
[9] Hari P, Ritu D, Vijay P M. Guidelines for meaningful & effective utilization of manpower at dental colleges for primary prevention of oro-dental problems in the country; 2007 Final report of GOI-WHO programme Available from: Oral_Health_Oro-Dental_Problem_WHO_Project_Guidelines, pdf. [Accessed on 2014 August 2].
[10] Shobha T. Challenges to the Oral Health Workforce in India. *J Dent Edu.* 2004;68(7):28-33.
[11] Ramandeep SG, Prabhleen B, Gurminder S, Anjali S, Heena K. Utilization of dental care: An Indian outlook. *J Nat Sci Biol Med.* 2013;4(2):292–97.
[12] Common medical test postponed to 2013-14. The Hindu. Available from: http://www.thehindu.com/education/issues/article2710175.ece [Accessed on 2014 January 9].
[13] Khader seeks dentists' help in implementing dental policy. The Hindu. Available fromhttp://www.thehindu.com/todays-paper/tp-national/tp-karnataka/khader-seeks-dentists-help-in-implementing-dental-policy/article5701403.ece [Accessed on 2014 February 20].

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