Original Article

Perception of dental professionals regarding integration of dental auxiliary into dental health delivery system

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Abstract

Background: The practical solution to handle increasing awareness toward dental treatment and cost of the dental treatment is integration of dental auxiliary into dental healthcare delivery system, and hence the objective of this study was to assess the perception of dental professionals regarding integration of dental auxiliaries into dental health delivery system in India. **Materials and Methods:** This cross-sectional study of Indian dentists was conducted using self-administered closed-ended questionnaire. Questions were asked to assess the opinions of the dentists on expanding the roles of dental auxiliaries and its consequences on dental services. The data were analyzed using Statistical Package for the Social Sciences version 22.0. The level of significance was kept at $P < 0.05$. **Results:** Of 230 dentists who participated in the study, 155 (67.39%) reported unfavorable opinion toward expanded duty dental auxiliaries. Among the studied consequences of expanding the functions of dental auxiliaries, cost-effectiveness of treatment had the highest mean score, followed by redundancy of dentists. Undergraduates reported that expanded function dental auxiliaries would lead to redundancy of dentists. **Conclusion:** It is recommended to train the auxiliaries to meet the expectations of patients, but this should be considered keeping in mind the existing situation of dental professionals in the country. Nonetheless, this study gives us information necessary to tailor health policies and improve the standards of the existing oral healthcare delivery in India.

Keywords: Dental auxiliary, dental profession, dentists, healthcare delivery

Introduction

The responsibility of addressing the requirements of various populations without any discrimination is of healthcare systems. Oral diseases affect 3.9 billion people with untreated dental caries being the most prevalent morbid condition. Furthermore, oral diseases significantly affect the quality of life and has a disastrous effect on the public health budget.[1,2]

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Global concerns have raised due to the increasing burden of oral diseases posing a massive challenge to the health system in light of growing social inequalities in oral health. Effective preventive strategies adopted in other countries should be considered to meet the demand for equitable distribution of oral health. Expected to become the world's most populous nation by 2040, experts have raised the alarms that India will face challenges such as huge burdens of disease, absence of needed medical care, and scarcity of public health professionals. A comprehensive dental workforce with appropriate skill mix is one such strategy, which could be adopted to address these issues.[3-8] The effective and efficient oral healthcare delivery

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is influenced by team approach involving dentists and dental auxiliaries.[9]

With the utilization of dental auxiliary, substantial improvements in productivity have been reported in dentistry, and the expansion of the functions of dental auxiliaries has been cited as a workforce multiplier.[10,11] The duties of dental auxiliaries are known to be influenced by legislation, depending on the distribution of dentist, dentist-to-population ratio, and access to care. The major reason for the delegation of some duties of dentists to the dental auxiliaries is the reduced time of dental services in areas with high dental patient load and inequitable distribution of dentists. There has been suggestion that the dental profession should adopt the medical model for delegation of some procedures to allied dental personnel, which has increased access to care and contact time with medical caregivers and ultimately lowering the cost of care. It has been observed from literature that dental auxiliaries can provide basic preventive and restorative dental services, allowing dentists to concentrate on providing more complex high-technology treatment.[12]

The past few years in the country have seen mushrooming of dental institutions producing approximately 25,000–30,000 B.D.S. graduates every year. The dentist-to-population ratio that was 1:30,000 in 2004 has now greatly varied due to significant geographic imbalance among dental colleges especially in rural and urban areas. Apart from course of dentistry, there are only two approved courses for dental auxiliary training programs: (a) dental mechanics and (b) dental hygienist.[3,13] With the increase in the number of dentists, whether the need of auxiliaries in India exists or not is very questionable. Hence, this study was conducted with the aim of assessing the perception of dental professionals regarding integration of dental auxiliaries into dental health delivery system in India.

Materials and Methods

This cross-sectional study of Indian dentists was conducted using self-administered closed-ended questionnaire obtained from Umanah and Azodo.[9] The data were collected from October 2018 till December 2018. The study participants were given a format consisting of informed consent, instructions, and questionnaire. They were given 1 hour to complete the questionnaire.

The first part of the questionnaire had questions pertaining to demographic characteristics of the participants, namely, age, gender, professional status, years in practices, and location of practice.

The second section assessed the opinions of the dentists on expanding the roles of dental auxiliaries on a 5-point Likert response (strongly agree, agree, undecided, disagree, and strongly disagree, scoring from 5 to 1, respectively). One question assessed whether they think the roles of dental auxiliaries should be expanded. The other 12 questions assessed opinions concerning auxiliaries performing the procedures such as impression taking for study cast, removal of sutures, placement of fissure sealants, manually excavate carious lesions and place temporary dressings, local anesthetic infiltration, extraction of deciduous teeth, extraction of uncomplicated permanent teeth, and so on. The range of possible scores was 13–65. The favorable opinion was defined as participants with opinion score of between 52 and 65, while unfavorable opinion was between scores 13 and 51.[9]

The third section contained nine questions, which assessed the perceived consequences of expanded function dental auxiliaries among the participants. These consequences were obtained from Kulkarni *et al.*'s[14] study on general dental practitioners in India and modified.

The data were analyzed using Statistical Package for the Social Sciences (SPSS) version 22.0. Demographic characteristics and opinion on expanded function dental auxiliaries were subjected to frequencies, percentages, and Chi-square statistics. Perception regarding the consequences of integrating dental auxiliary into health system with demographics was assessed using unpaired *t*-test. The level of significance was kept at $P < 0.05$.

Results

A total of 230 dentists participated in this study. A total of 97 respondents were males (42.2%), while 133 were females (57.8%) with a mean age of 27.6 years. A majority of participants ($n = 127$; 55.2%) had less than 5 years of practice experience, 70 (30.4%) were postgraduate students, and many of them practiced in urban area [169 (74.48%)] [Table 1].

Of the participants, 75 (32.6%) reported favorable opinion on expanded function dental auxiliaries. Years of experience, professional status, and location of practice were significantly associated with participants' opinion on expanded function dental auxiliaries [Table 1].

Among the studied consequences of expanding the functions of dental auxiliaries, cost-effectiveness of treatment had the highest mean score (4. 34 ± 1.03), which was not significantly different in all demographic characteristics. The second highest mean score was perception of redundancy of dentists (4.16 ± 1.98) which was significantly different based on years of experience. Lowest mean score was observed for increased efficiency and increased services [Table 2].

Discussion

To meet the increasing demand and expectations of oral healthcare services, increase and improvement in access to oral healthcare is important.[15] Lowering of oral health status is a result of decreased number of personnel available to provide oral healthcare. Negative and unfavorable attitude of dentists toward the implementation of expanded function dental auxiliaries due to fear of losing relevance has led to a compromise in their use.

Table 1: Comparison of favorable and unfavorable dentists based on demographics by Chi-square test

	Characteristics	Frequency (%)	Favorable (%)	Unfavorable (%)	*P*
Gender	Male	97 (42.8%)	38 (39.18%)	59 (60.82%)	0.482
	Female	133 (57.8%)	37 (27.82%)	96 (72.18%)	
Years of experience	<5	127 (55.22%)	39 (30.71%)	88 (69.29%)	0.048*
	5-10	88 (38.26%)	32 (36.36%)	56 (63.64%)	
	>10	15 (6.52%)	04 (26.67%)	11 (73.33%)	
Professional status	Undergraduate	60 (26.08%)	09 (15.00%)	51 (85.00%)	0.029*
	Postgraduate	70 (30.44%)	31 (44.29%)	39 (55.71%)	
	Faculty	53 (23.04%)	18 (33.96%)	35 (66.04%)	
	Private practice	47 (20.44%)	17 (36.17%)	30 (63.83%)	
Location of practice	Urban	169 (73.48%)	58 (34.32%)	111 (65.68%)	0.042*
	Periurban	61 (26.52%)	17 (27.87%)	44 (72.13%)	
Total			75 (32.61%)	155 (67.39%)	

*P<0.05; significant

Table 2: Comparison of mean scores of perceived consequences of expanded duties of auxiliaries based on demographics by unpaired *t*-test

Characteristics	Redundancy of dentists	Tasks too difficult	Training makes easier	Increased efficiency	Cost-effective	Patient's nonacceptance	Increased services	Increased job satisfaction	Legislation
Gender									
Male	4.12±1.02	3.73±1.80	3.91±2.70	2.49±2.10	4.17±0.08	4.23±0.07	2.66±1.64	3.26±1.14	2.44±1.62
Female	3.94±2.08	4.44±0.33	3.82±0.97	2.67±1.20	4.92±0.01	3.81±1.65	2.98±1.76	2.97±1.40	2.75±0.97
Years of experience									
<5	4.66±1.60*	3.61±2.67	3.95±1.10	2.59±2.56	3.71±0.01	3.27±3.01	2.64±1.27*	3.82±1.08	2.21±2.07
5-10	4.21±1.12	3.78±2.24	4.34±1.96	2.75±0.06	3.82±0.18	3.45±0.27	3.41±0.09	3.64±1.02	2.62±1.59
>10	3.62±2.18	3.91±0.02	4.21±0.21	3.06±1.57	4.76±0.02	4.16±1.14	3.09±2.53	3.19±0.54	2.72±2.56
Professional status									
Undergraduate	4.71±0.01	3.46±2.02*	3.72±2.10	2.87±0.70	4.49±0.25	4.12±0.87	2.36±1.97	3.24±0.32	2.86±1.21
Postgraduate	3.10±2.60	4.56±0.09	3.86±0.17	3.26±2.06	4.52±0.19	4.02±0.42	3.04±1.05	3.27±1.58	2.90±0.10
Faculty	3.65±1.70	4.09±0.10	3.79±0.21	3.19±0.21	3.66±0.56	3.96±0.07	3.15±1.23	3.42±0.51	2.46±1.57
Private practice	4.47±0.23	2.53±1.86	3.44±0.30	2.96±2.57	3.73±0.24	3.81±0.26	3.46±2.59	3.02±0.26	2.53±2.86
Location of practice									
Urban	4.76±0.01	4.41±0.24	2.42±1.43	3.29±0.61	4.42±0.12	4.26±2.49	2.63±2.16	3.53±0.71	2.66±0.20
Periurban	3.56±1.34	1.97±2.44	4.63±0.01	2.44±0.27	4.52±0.09	3.82±2.76	2.59±1.62	3.61±0.65	2.81±1.21
Total	4.16±1.98	3.89±1.66	3.28±2.07	2.64±1.64	4.34±1.03	3.96±1.80	2.92±2.12	3.24±1.49	2.63±1.92

*P<0.05; significant

In this study, a majority of our participants had unfavorable opinion on the implementation of expanded function dental auxiliaries. This was in accord to a study conducted on Nigerian dentists[9] and Cameroonian dentists who expressed divergent opinions about expansion and delegation of duties to the dental auxiliaries in spite of having satisfaction in the duties of the dental auxiliaries.[16]

The increasing number of dentists who are unemployed and lack of proper remuneration to the rendered services might have led to high prevalence of unfavorable dentist toward expanding the functions of dental auxiliaries. Our results showed that dentist with unfavorable opinion reported that redundancy of dentist would result in expanded function dental auxiliaries which was again similar to the results of Umanah and Azodo.[9]

The fluoride varnish application by pediatric healthcare providers has been opposed by dental professionals as reported by previous studies.[17] Dentists prefer not hiring dental hygienists, although it improves dental practice's patient capacity. This might be due to insufficient work itself because of poor patient awareness in the country and cost issues.[18]

In this study, undergraduates were of the opinion that implementation of expanded function dental auxiliaries would result in redundancy of dentists. Similar trends were seen by Umanah and Azodo[9] who reported that nonspecialists feared expanded function dental auxiliaries taking over their job in the absence of extant control measures.[9] Mass production of dental graduates in the country has created the situation of frustration and distress in them for future security.

Dentists agreed that an increase in service delivery, efficiency, and job satisfaction would occur with the help of auxiliaries. For treatment of a higher number of patients including their felt needs and preventive measures, it is important to substantially expand the capacity of general dental practices with the effective use of dental auxiliaries as suggested by literature.[19] According

to Fried *et al.*[20] by 2040, many will practice with multidisciplinary healthcare teams in large-group medical and dental practices and in a variety of nontraditional community settings. Gurenlian *et al.*[21] suggested that the integration of dental hygienists into dental healthcare delivery system needs curriculum change, and it should be redirected and strengthened further.

Limitations

The study was conducted in a single region, which might not be representative of all dental professionals in India, thus limiting the generalizability. Since it was a questionnaire study, it does not give information on actual practices of participants, reflecting the inherent limitations of such studies. Further studies are warranted to investigate the knowledge, attitude, and awareness pertaining to the research ethics by some better tools.

Conclusion

It is recommended to train the auxiliaries to meet the expectations of patients, but this should be considered keeping in mind the existing situation of dental professionals in the country. Nonetheless, this study gives us information necessary to tailor health policies and improve the standards of the existing oral healthcare delivery in India.

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Conflicts of interest

There are no conflicts of interest.

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