



RESEARCH ARTICLE

DENTAL CHAIR: THE MACHINE DENTISTS WORK MOST UPON, KNOW LITTLE ABOUT

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ABSTRACT

Objectives: Oral health is a very important component of general health. It is clear that proper functioning of dental chair is mandatory to deliver oral health care in dental office. Most dentists experienced problems with dental chair with varying frequency and they may not always have spare dental chair in their clinics. This definitely hampers the oral health care delivery. Most of the time, the dental chairs have minor problems that can be easily corrected by anyone with some technical understanding. **Methods:** A study was conducted to know the extent of such problems in dental offices of Varanasi (India) and to suggest any possible solution. The response of 300 dentists of Varanasi was collected in form of a questionnaire, amongst which 270 were included in the study. The data collected were statistically analyzed. **Results:** It was found that most dentists face technical problems with their dental chairs ($p=0.014$) and are not satisfied with dental chair technician services and felt that they were overcharged ($p=0.000$). **Conclusion:** It is suggested that dental chair technical training should be included in dental graduate's curriculum which will help the new generation dentist to serve the community better.

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INTRODUCTION

A good dental practice is based upon sound knowledge and skills, good quality of dental instruments, good dental materials and a good clinical setup. Amongst these, dental chair play a pivotal role as it allows the dentist to work competently and makes the patients comfortable. Like any machine dental chair also requires maintenance. Many times, planned routine dental procedures cannot be performed because of non-functioning or, malfunctioning dental chair (www.who.int/mediacentre/factsheets/fs318/en). It is one of the most common problems faced by the dentist in dental office.

Dentist has to cancel appointments of the patients, as many times dental chair technician fail to respond promptly for the dental chair services. The resulting situation not only makes the dentist embarrass and affect the routine patient management, patients also suffer from delay in their dental treatment. Subsequently, the reputation of dental office also takes a back seat. In most of the professions, the person in touch with the machine, he works upon, knows the machine well, except the dentist. Due to lack of technical knowledge about the dental chair, it has also been experienced that dental chair technician takes undue advantage of dentists. This situation warrants an immediate attention of dental fraternity. To check the knowledge about the working of dental chair, its technical aspect and problems faced by dentist on day to day basis, this study was undertaken to find out the need of technical knowledge of dental chair for a dentist; to find out the extent of dental chair technician services required and

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delivered in dental office; to find out the promptness of dental chair technician services in dental office and to find out and suggest possible solution/s (if any) for the situation.

MATERIALS AND METHODS

The present study was carried out at Faculty of Dental Sciences, Institute of Medical Sciences, Banaras Hindu University, Varanasi UP, India. All the practicing dental surgeons of Varanasi district were included in the study. The private practitioners were divided into 4 groups according to their work experience. Group A includes dentists with clinical experience 1-3 years, while group B, C and D include the dentists with 3-5, 5-10 and more than 10 years of clinical experience respectively. Every dentist was provided with questionnaire asking specific questions. After scrutiny, out of the total 300 questionnaires, 270 were finally selected for the study. The exclusion criteria include those dentists who did not respond to the questionnaire, dental surgeons having private practice of less than one year and unfilled or incompletely filled questionnaires.

The questionnaire included the following questions:

- Since how long are you running a dental clinic?
- How often do you face problem with your dental chair in a year?
- How many dental chairs are there in your dental clinic? Please specify (Manual / Electronic).
- Have you ever returned your patients due to non working dental chair? Or, Delay in repair of non working dental chair has ever affected your practice?
- Does your dental chair technician attend your clinic promptly when you call him?
- Have you ever felt that you are overcharged or cheated by your dental chair technician?
- Have you ever felt that you should have basic knowledge about dental chair? Or, have you ever felt that you would have corrected the small problem in dental chair yourself, instead of relying on dental chair technician?
- Should a basic technical course about dental chair and its repair be included in Bachelor of Dental Surgery (BDS) course?

The data of the questionnaire were tabulated and subjected to statistical analysis. Pearson chi-square test was used to study the association between responses to the questions (independent variables) and the study groups.

Statistics and Results

Out of the 270 selected private dental practitioners in the study, 80 were from group A, 115 were from group B, 58 were from group C while only 17 were from group D (Table 1). According to answer of question no. 2, it was observed that more than 50 % dentists do face technical problem more than twice with their dental chair in a year. Pearson chi-square test value was 20.714, and p value was 0.014 for this question, showing significant association (Table 2). Most of the dentists have only one dental chair in their clinic. Only less than 10% dentists have 2 or more dental chairs in their clinics. Pearson chi-square test value was 14.729, and p value was 0.022 for the answer of question 3, showing **significant association** (Table

3). 87.8% dentists have returned the patients due to non working dental chair. Pearson chi-square test value was 3.266, and p value was 0.352 for the answer of 4th question, showing non-significant association between the study groups. It means that delay in repair of non-working dental chair has affected the practice of all groups of dental practitioners (Table 4). On asking the promptness of dental technician to attend and address the problems with dental chairs, only 22.2% dentists were satisfied and rest 77.8% found the dental technician's response inappropriate. Pearson chi-square test value was 5.544, and p value was 0.136 for the answer of 5th question, showing non-significant association (Table 5). Two third of the dentists (66.3%) have felt that they were overcharged by the dental chair technician. For the answer of 6th question Pearson chi-square test value was 100.6, and p value was 0.000, showing strong significant association (Table 6). 83.7% dentists felt that they should be having basic knowledge about dental chair so that they could have corrected the minor problems in the dental chairs on their own. Pearson chi-square test value was 16.602, and p value was 0.001 for the answer of question 7, showing strong and significant association (Table 7). The inclusion of a basic technical course about dental chair and its repair in BDS curriculum was advocated by 64.8% dentists. However, No significant association was found for the answer of 8th question as Pearson chi-square test value was 5.667, and p value was 0.129 (Table 8).

DISCUSSION

Oral health around the world is remarkably poor. According to the World Health Organization (WHO), 60-90% of school children and nearly 100% of adults worldwide have dental caries; severe periodontal disease is found in 15-20% of adults aged 35-44 years; approximately 30% of people aged 65-74 have no natural teeth; oral disease in children and adults is higher among poor and disadvantaged population groups; and risk factors for oral diseases include an unhealthy diet, tobacco use, harmful alcohol use, poor oral hygiene, and social determinants (www.who.int/mediacentre/factsheets/fs318/en). In country like India, its great population (about 1.25 billion) becomes a challenge for country's health care systems. Also, currently dental education in India has some serious challenges that will need to be addressed. Dental students in India are trained to excel theoretically, but there seems to be a lesser correlation between what is learned and what is applied in the clinics. In the real world, when dealing with patients, problem-solving skills and practical knowledge are necessary. In most dental schools, students are not trained to treat the patient as a whole. They are expected to learn general patient management skills after graduation. India with its growing population and economy, is challenged by a low dentist-to-population ratio and also the current dental education model (Elangovan et al., 2010).

To help improve the oral health status of the public, professionals must consider changing the oral health care delivery system and their own mindset about what is possible (Gurenlian, 2015). Over the past dozen years, there have been multiple reports issued and groups conducting studies about the future of dental education, all of them strongly recommend for the change in dental education (Field, 1995; Oral health in America, 2009; American Dental Association, 2002; DePaola, 2004). There is significant evidence that most dental schools continue to teach the traditional basic sciences in lockstep sequence (Kassebaum, 2004).

Table 1. Answer of question 1: Since how long are you running a dental clinic?)

Parameter	Group A	Group B	Group C	Group D
Work/clinical experience	1-3 years	3-5 years	5-10 years	>10 years
No. of private practitioners	80	115	58	17

Table 2. Answer of question 2: How often do you face problem with your dental chair in a year?

Annual frequency of dental chair malfunction			Group				Total	
			A	B	C	D		
q2	Never	Count	17	11	7	2	37	Chi-Square value= 20.714 ^a p value=0.014
		% within q2	45.9%	29.7%	18.9%	5.4%	100.0%	
		% within group	21.2%	9.6%	12.1%	11.8%	13.7%	
	<2	% of Total	6.3%	4.1%	2.6%	.7%	13.7%	
		Count	25	49	20	0	94	
		% within q2	26.6%	52.1%	21.3%	.0%	100.0%	
	2-5	% within group	31.2%	42.6%	34.5%	.0%	34.8%	
		% of Total	9.3%	18.1%	7.4%	.0%	34.8%	
		Count	22	37	16	10	85	
	>5	% within q2	25.9%	43.5%	18.8%	11.8%	100.0%	
		% within group	27.5%	32.2%	27.6%	58.8%	31.5%	
		% of Total	8.1%	13.7%	5.9%	3.7%	31.5%	
Total	Count	80	115	58	17	270		
	% within q2	29.6%	42.6%	21.5%	6.3%	100.0%		
	% within group	100.0%	100.0%	100.0%	100.0%	100.0%		
	% of Total	29.6%	42.6%	21.5%	6.3%	100.0%		

Table 3. Answer of question 3: How many dental chairs are there in your dental clinic? Please specify (Manual / Electronic.)

			Group				Total	
			A	B	C	D		
q3	Only manual (1)	Count	38	65	28	12	143	Chi-Square value= 14.729 ^a p value =0.022
		% within q3	26.6%	45.5%	19.6%	8.4%	100.0%	
		% within group	47.5%	56.5%	48.3%	70.6%	53.0%	
	Only electronic (1)	% of Total	14.1%	24.1%	10.4%	4.4%	53.0%	
		Count	40	36	21	4	101	
		% within q3	39.6%	35.6%	20.8%	4.0%	100.0%	
	Manual and electronic both (≥2)	% within group	50.0%	31.3%	36.2%	23.5%	37.4%	
		% of Total	14.8%	13.3%	7.8%	1.5%	37.4%	
		Count	2	14	9	1	26	
	Total	% within q3	7.7%	53.8%	34.6%	3.8%	100.0%	
		% within group	2.5%	12.2%	15.5%	5.9%	9.6%	
		% of Total	.7%	5.2%	3.3%	.4%	9.6%	
Count		80	115	58	17	270		
	% within q3	29.6%	42.6%	21.5%	6.3%	100.0%		
	% within group	100.0%	100.0%	100.0%	100.0%	100.0%		
	% of Total	29.6%	42.6%	21.5%	6.3%	100.0%		

Table 4. Answer of question 4: Have you ever returned your patients due to non working dental chair? Or, Delay in repair of non working dental chair has ever affected your practice?)

			group				Total	
			A	B	C	D		
q4	Yes	Count	70	98	52	17	237	Chi-Square value= 3.266 ^a p value =0.352
		% within q4	29.5%	41.4%	21.9%	7.2%	100.0%	
		% within group	87.5%	85.2%	89.7%	100.0%	87.8%	
		% of Total	25.9%	36.3%	19.3%	6.3%	87.8%	
	No	Count	10	17	6	0	33	
		% within q4	30.3%	51.5%	18.2%	.0%	100.0%	
		% within group	12.5%	14.8%	10.3%	.0%	12.2%	
		% of Total	3.7%	6.3%	2.2%	.0%	12.2%	
	Total	Count	80	115	58	17	270	
		% within q4	29.6%	42.6%	21.5%	6.3%	100.0%	
		% within group	100.0%	100.0%	100.0%	100.0%	100.0%	
		% of Total	29.6%	42.6%	21.5%	6.3%	100.0%	

Table 5. Answer of question 5: Does your dental chair technician attend your clinic promptly when you call him?

		Group				Total		
		A	B	C	D			
q5	Yes	Count	12	25	18	5	60	Chi-Square value= 5.544 ^a p value =0.136
		% within q5	20.0%	41.7%	30.0%	8.3%	100.0%	
		% within group	15.0%	21.7%	31.0%	29.4%	22.2%	
	No	% of Total	4.4%	9.3%	6.7%	1.9%	22.2%	
		Count	68	90	40	12	210	
		% within q5	32.4%	42.9%	19.0%	5.7%	100.0%	
	Total	% within group	85.0%	78.3%	69.0%	70.6%	77.8%	
		% of Total	25.2%	33.3%	14.8%	4.4%	77.8%	
		Count	80	115	58	17	270	
	% within q5	29.6%	42.6%	21.5%	6.3%	100.0%		
	% within group	100.0%	100.0%	100.0%	100.0%	100.0%		
	% of Total	29.6%	42.6%	21.5%	6.3%	100.0%		

Table 6 Answer of question 6: Have you ever felt that you are overcharged or cheated by your dental chair technician?)

		Group				Total		
		A	B	C	D			
q6	Yes	Count	18	103	45	13	179	Chi-Square value= 100.6 ^a p value =0.000
		% within q6	10.1%	57.5%	25.1%	7.3%	100.0%	
		% within group	22.5%	89.6%	77.6%	76.5%	66.3%	
	No	% of Total	6.7%	38.1%	16.7%	4.8%	66.3%	
		Count	62	12	13	4	91	
		% within q6	68.1%	13.2%	14.3%	4.4%	100.0%	
	Total	% within group	77.5%	10.4%	22.4%	23.5%	33.7%	
		% of Total	23.0%	4.4%	4.8%	1.5%	33.7%	
		Count	80	115	58	17	270	
	% within q6	29.6%	42.6%	21.5%	6.3%	100.0%		
	% within group	100.0%	100.0%	100.0%	100.0%	100.0%		
	% of Total	29.6%	42.6%	21.5%	6.3%	100.0%		

Table 7. Answer of question 7: Have you ever felt that you should have basic knowledge about dental chair? Or, have you ever felt that you would have corrected the small problem in dental chair yourself, instead of relying on dental chair technician?)

		Group				Total		
		A	B	C	D			
q7	Yes	Count	72	100	45	9	226	Chi-Square value= 16.602 ^a p value =0.001
		% within q7	31.9%	44.2%	19.9%	4.0%	100.0%	
		% within group	90.0%	87.0%	77.6%	52.9%	83.7%	
	No	% of Total	26.7%	37.0%	16.7%	3.3%	83.7%	
		Count	8	15	13	8	44	
		% within q7	18.2%	34.1%	29.5%	18.2%	100.0%	
	Total	% within group	10.0%	13.0%	22.4%	47.1%	16.3%	
		% of Total	3.0%	5.6%	4.8%	3.0%	16.3%	
		Count	80	115	58	17	270	
	% within q7	29.6%	42.6%	21.5%	6.3%	100.0%		
	% within group	100.0%	100.0%	100.0%	100.0%	100.0%		
	% of Total	29.6%	42.6%	21.5%	6.3%	100.0%		

Table 8. Answer of question 8: Should a basic technical course about dental chair and its repair be included in BDS course?)

		Group				Total		
		A	B	C	D			
q8	Yes	Count	60	70	36	9	175	Chi-Square value= 5.667 ^a p value =0.129
		% within q8	34.3%	40.0%	20.6%	5.1%	100.0%	
		% within group	75.0%	60.9%	62.1%	52.9%	64.8%	
	No	% of Total	22.2%	25.9%	13.3%	3.3%	64.8%	
		Count	20	45	22	8	95	
		% within q8	21.1%	47.4%	23.2%	8.4%	100.0%	
	Total	% within group	25.0%	39.1%	37.9%	47.1%	35.2%	
		% of Total	7.4%	16.7%	8.1%	3.0%	35.2%	
		Count	80	115	58	17	270	
	% within q8	29.6%	42.6%	21.5%	6.3%	100.0%		
	% within group	100.0%	100.0%	100.0%	100.0%	100.0%		
	% of Total	29.6%	42.6%	21.5%	6.3%	100.0%		

Dental schools have created a gap between new scientific and technical advances and incorporation of these advances into dental education and clinical practice. Perhaps the greatest challenge dentistry faces is keeping the curriculum as relevant

as possible (Alfano, 2004). In simple words the status quo is not working for dental education system. It is better to have an isolated, insular approach to train future dentists rather than an educational system in which dentistry is embedded within a comprehensive, interdisciplinary health care and training

system. Dental education should have kept pace with shifting patient demographics as well as dental surgeon's working conditions. In our study, the majority of dentists more than 50% face technical problems at least twice or more every year (Table-2). It indicates the need of technical assistance in dental office for maintenance of dental chairs. Most of the dentists in Varanasi have single dental chair in their clinics (Table-3). Only about 10% dentists are having 2 or more chairs in their clinics. So most of the dentists have no spare chair option, in case they find any technical disturbance with the dental chair, which in-turn hamper their dental practice. Majority of practitioners (87.8%) had returned their patients or had to cancel the appointments due to non working dental chair (Table-4). It could be due to bad quality dental chair products, as in India many local companies are manufacturing their cheap and low quality dental chairs and dentists are buying them due to low initial cost so they find it convenient as their initial investment is reduced. It might also be due to unavailability of dental chair technician, who fail to attend and fix the problem promptly. In our study 77.8% dentists (Table-5) said that their dental chair technician did not attend the problem on time, which resulted in to cancellation of dental office appointment. Firstly, dental chair technician comes late to attend the problem and when they come, they charge inappropriately as they know without them dentists are helpless and dental office will not be running. Dentists are compelled to pay whatever they ask for. 66.3% dentists (Table-6) found that dental chair technicians are charging inappropriately for their services. Remaining 33.7% dentists, who don't feel the same way, are mostly new clinicians, having 1-3 years of clinical experience. It might be because their dental chair is new so it will have fewer problems initially, or due to the guarantee/ warranty they get for 2 years or so, on purchase of new dental chair, offered by company or supplier. So that they just don't have to pay anything for any technical error during promised period. This could be the reason why most of Group 'A' dentists doesn't feel cheated by the dental chair technicians.

Most of the dentists (83.7%) strongly suggested the need of having some knowledge about technical aspect of dental chair so that they could help themselves instead of relying totally on technician (Table-7). Technician will know that dentist has basic understanding about technical aspect of dental chair and he will not be able to exploit or cheat the dentist or to charge inappropriately. Also, the technician knows that if he doesn't show on time, the dentist may attempt and succeed to correct the dental chair problem which will affect his earning adversely. The inclusion of technical aspect of dental chair in the BDS curriculum has been advocated by 64.8% dentists (Table-8). At least one week optional training can be given to the BDS students, so that it will help them in future in their clinical practice and to deliver oral health services better to the society.

Conclusion

It is clear from our study that most dentists in India face problems with their dental chair in dental office and technicians are not providing good service to manage it. Most of the dental surgeons suggested that inclusion of technical training about dental chair in curriculum of graduation course of dentistry will definitely help the new generation dentists in providing oral health care. It is time that the dental council of India and the government of India revise the dental education curriculum and make realistic changes in order to address the issue.

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REFERENCES

- Alfano MC. 2004. Hedge our bet or trim our hedge: the need to reform the dental education process. *Global Health Nexus*; 6(2): 16–21.
- American Dental Association. 2002. Future of dentistry: today's vision, tomorrow's reality. Chicago: American Dental Association, Health Policy Resources Center.
- De Paola DP, Slavkin HC. 2004. Reforming dental health professions education: a white paper. *J Dent Educ*; 68(11): 1139–48.
- Elangovan S., Allareddy V., Singh F., Taneja P., Karimbux N. 2010. Indian dental education in the new millennium: challenges and opportunities. *J Dent Educ.*, 74(9): 1011–6.
- Field MJ. 1995. Dental education at the crossroads: challenges and change. An Institute of Medicine Report. Washington, DC: National Academy Press.
- Gurenlian JR. 2015. Inter professional education and practice. *J Dent Educ.*, 79(5): S48–50.
- Kassebaum DK., Hendricson WD., Taft T., Haden NK. 2004. The dental curriculum at North American dental institutions in 2002–03: a survey of current structure, recent innovations, and planned changes. *J Dent Educ*; 68(9): 914–31.
- Oral health in America: A report of the surgeon general. 2000. Washington, DC: U.S. Department of Health and Human Services.
- Pyle MK., Andrieu SC., Chadwick DG., Chmar JE., Cole JR., George MC. et al. 2006. The case for change in dental education. *J Dent Educ.*, 70(9): 921–4.
- World Health Organization. 2014. Oral health fact sheet no. 318. At: www.who.int/mediacentre/factsheets/fs318/en.