ATTITUDE AMONG DENTAL PRACTIONERS TOWARDS USE OF ROTARY INSTRUMENTS AND HAND INSTRUMENTS FOR ROOT CANAL TREATMENT: A COMPARATIVE STUDY

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ABSTRACT

Aim: The purpose of present study is to assess the attitude of general dental practioners towards use rotary instruments and hand instruments for root canal treatment.

Material and Methods: It was a cross-sectional questionnaire study conducted in the private clinics in Lucknow city, Uttar Pradesh. A total of 400 clinics were visited and face to face interview schedule was conducted. Questionnaire consists of demographic details of dental professionals. Information regarding the years of experience, OPD details and number of root canal treatment done per week by dental professionals was obtained. Use of rotary and hand instruments by dental professionals was inquired. Years of experience with Rotary instruments, procedural problems with rotary instruments faced by dental professionals and reasons for not using the rotary instruments if any was also recorded.

Results: 102 (33%) of the total study samples were using rotary instruments for root canal treatment and 100 (32%) using both rotary and hand instruments for root canal treatment. Dentists who are using rotary instruments are facing the procedural problem of file breakage {70 (36%)}. And those dental professionals using hand instruments are facing the problem of ledge formation {82(40%)}.

Conclusions: The main procedural failure of the rotary instruments in root canal treatment, faced by dental professionals was file breakage and with hand instrument is ledge formation. Lack of expertise is the main reason which restricts dental professionals from using rotary instruments.

KEYWORDS: dental practitioners, hand instruments root canal treatment, rotary instruments

INTRODUCTION

The primary goal of endodontic treatment is to eradicate micro-organisms from the root canal system; to prevent further reinfection, by the procedure of cleaning and shaping of root canal system with copious irrigation[1]. Cleaning and shaping of the root canal system is one of the main goals in endodontics which can be carried out using different systems and techniques[2]. To reach this aim, stainless steel hand instruments have been traditionally applied. Lack of flexibility of instruments causes errors during endodontic treatments[3] which lead to decreased success rate[4]. After introducing rotary

nickel-titanium (NiTi), their usage became popular[5]. NiTi instruments super elasticity along with their advanced design made them favorable for effective and safe instrumentation of narrow and curved root canals using low torque handpieces[3]. The ability of some NiTi rotary systems in maintaining the root canal curvature has been studied[6-11].

Fracture susceptibility is considered as a major disadvantage of these instruments[2]. In the past decade, many innovative concepts, techniques and instruments have been introduced for the most acceptable cleaning, shaping and obturation. In the guidelines have been formulated reflecting an increased interest in quality assurance in endodontic procedures. Although the viewpoint of academic teaching and endodontic societies is clear, little information is available regarding the attitude of dental practitioners towards these standards, and on how far the changes in endodontic technique have been incorporated into daily practice[12].

Epidemiological studies suggest that the failure rate is distinctly higher for teeth treated by dentists who are not endodontic specialists[13-14]. However, very few data are available about the general dental practitioners approach to Rotary instruments as compared to hand instruments[15]. Therefore the purpose of present study was to assess the attitude of general dental practioners towards use rotary instruments and hand instruments for root canal treatment.

MATERIAL AND METHODS

It was a cross-sectional questionnaire study conducted in the private clinics in Lucknow city, Uttar Pradesh. Ethical approval was obtained from Ethical committee of Saraswati Dental College & Hospital, Lucknow. The study was conducted in 2 months (January-February, 2016). Written informed consent was also obtained from every dental professionals. Every dental professional including bachelors and specialist in dental surgery and, running his or her private practice for more than 2 years in Lucknow city, Uttar Pradesh and gave the informed consent, was included in the study. A total of 400 clinics were visited and face to face interview schedule was conducted. List of clinics was obtained from site of Indian Dental Association, Lucknow branch. The questionnaire was pretested in a pilot survey comprising of 40 participants. The Proforma was tested for reproducibility by test-retest. Reliability of the questionnaire was assessed by using Test-Retest and the values of measured Kappa (k) =0.89 Weighted Kappa (k_w) = 0.92. Internal consistency of questionnaires was assessed by applying Chronbachs-Alpha (α) and the value of α=0.80 was measured. Questionnaire consists of demographic details of dental professionals. Information regarding the years of experience, OPD details and number of root canal treatment done per week by dental professionals was obtained. Use of rotary and hand instruments by dental professionals was inquired. Years of experience with rotary instruments, procedural problems with rotary instruments faced by dental professionals and reasons for not using the rotary instruments if any was also recorded. The data collected was entered in Microsoft Excel 2007 and descriptive statistics was applied.

RESULTS

Table 1 shows that majority of dental practioners were having age group of 36 to 45 years 208 (67%) of age. Most of study samples were male 192 (62%). Most of dental practioners which were included in the study were bachelors in dental surgery 202 (65%). Regarding the professional experience most of dentist {158(51%)} were having experience of 1-5 years. Only 87 (28%) of dental professionals have OPD more than 40 patients per week with only 52 (16%) of dental professionals doing more than 20 root canal treatments per week as shown by table 2. In relation to table 3 only 102 (33%) of the total study samples were using rotary instruments for root canal treatment and 100 (32%) using both rotary and hand instruments for root canal treatment. Table 4 shows that, of the total dental professionals using rotary instruments most of them 102 (50%) were using it for past 1 to 2 years. While those using hand instruments most of them 104 (50%) were using for more than 4 years. Most of the dentists who are using rotary instruments are facing the procedural problem of file breakage {70 (36%)}. And those dental professionals using hand instruments are facing the problem of ledge formation {82(40%)} (Table 5). Lack of expertise {40 (37%)} with rotary instruments is the main reasons of not using the rotary instruments by the dental professionals as shown in table 6.

DISCUSSION

Present study is undertaken to assess the attitude of dental professionals towards the use of rotary instruments in root canal treatment. In previous studies assessment of use of rotary instrument was done but very less number of studies had done comparison of hand and rotary instruments in root canal instruments. In the present study majority of dental professionals had professional experience of 1 to 5 years, same results shown by Ravanshad et al.[16] in which

46.2% of dental professionals had professional experience of 1 to 5 years. In other study by Unal et al.[17] most of the dental professionals had professional experience of 1 to 10 years. In the present study 33% of dental professionals use rotary instruments and 35% of them are using hand instruments and 32% of respondents are using both types of instruments.

Table 1. Age and gender distribution of the study samples.

		Number (n)	Percentage (%)
Age group	25-35 years	57	18%
	36-45 years	208	67%
	More than 45years	44	15%
	Total	**309**	**100%**
Gender	Male	192	62%
	Female	117	38%
	Total	**309**	**100%**

Table 2. Years of professional experience, OPD details of dental practioners.

		N (NUMBER)	% (PERCENTAGE)
Specialization	BDS	202	65%
	MDS	107	35%
	Total	**309**	**100%**
Year of professional experience	1-5 Years	158	51%
	6-10 Years	73	24%
	More Than 10 Years	78	25%
	Total	**309**	**100%**
Number of OPD per week	1-20	123	40%
	21-40	99	32%
	MORE THAN 40	87	28%
	Total	**309**	**100%**
Number of root canal treatment done per week	1-10	156	51%
	11-20	101	33%
	MORE THAN 20	52	16%
	Total	**309**	**100%**

Table 3. Use of rotary and hand endodontic instruments in root canal treatment by dental practioners.

Type of Instrument	(n) Number	(%) Percentage
Rotary Instruments	102	33%
Hand Instrument	107	35 %
Both Rotary and Hand Instruments	100	32 %
Total	**309**	**100 %**

For RCT (root canal treatment) as compared to study by Unal et al.[17] to assess the information on the materials and methods employed in root canal treatment by dentists in Turkey in which 41.2% of dental professionals were using rotary instruments. This may be due to the fact that in this study 96% of the study samples were general dental professionals therefore due to lack of specialized training and therefore less use of rotary instruments. In the study by Gaikwad et al.[18] 71.2% of dental professionals are using hand instruments and 12.6% were using rotary instruments while 16% of them are using both. In a study by Parashos et al.[2] in an australian study determined that 22% of general dentists and 64% of endodontists using rotary instruments, approximately 70% of general dentists and almost 83% of endodontists in a study performed in UK[2,19] as well as 77% of the Swedish general dentists who participated in an endodontics educational program[20] have mentioned that they used NiTi rotary instruments[21]. In the present study 50% of dental professionals had 1

to 2 years of experience with rotary instruments and more than 4 years of experience with hand instruments in contrast to study by Mozayeni et al.[15] in which 39% of dental professionals had more than 3 years of experience with rotary instruments. In the present study main procedural problem that a dentist faced with rotary instrument was breakage of file {70(36%)} while with hand instruments is ledge formation {82(40%)}. Same results were seen in study by Mozayeni et al.[15] in which file fracture was faced by 88.5% of dental professionals using rotary instruments and ledge formation with hand instruments.

Table 4. Experience with rotary and hand instruments in dental practioners.

Period	Rotary Instruments		Hand Instruments	
	N	%	N	%
1-2 years	102	50 %	45	22 %
3-4 years	48	24 %	58	28 %
More than 4 years	52	26 %	104	50 %
Total	**202**	**100 %**	**207**	**100 %**

Table 5. Procedural problems faced by dental practioners with rotary instruments and hand instruments.

Period	Rotary Instruments		Hand Instruments	
	N	%	N	%
Ledging of the canal	29	14 %	82	40 %
Transportation of the canal terminus	19	9 %	23	11 %
Strip perforation of a curved canal	13	6%	12	6%
Straightening of curved canals	11	5 %	17	8 %
Excessive dentine removal	28	14 %	22	11 %
Binding of the file in the canal	32	16%	21	10 %
File fracture	70	36%	23	11 %
File overing	0	0%	7	3 %
Total	**202**	**100 %**	**207**	**100 %**

Table 6. Reasons of not using the rotary instruments by dental professionals.

Reasons	N (Number)	% (Percentage)
Lack of expertise with Rotary instruments.	40	37 %
Lack of finance to purchase Rotary instrument kit.	11	10 %
Patient fear from rotary instrument.	7	7%
Hiring of Specialist by Dental Professionals.	17	16 %
Failure of cases in the past with Rotary instruments.	32	30 %
Total	**107**	**100%**

CONCLUSIONS

From above, It is been concluded that dental professionals in Lucknow are using rotary instruments and combination of hand and rotary instruments. The main procedural failure of the rotary instruments in root canal treatment, faced by dental professionals was file breakage and with hand instrument is ledge formation. Lack of expertise is the main reason which restricts dental professionals from using rotary instruments. This shows that more and more program should be organized for them to improve their compliance.

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