



Study Difficulty Degree of Root Canal Treatment among General Dentists

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ABSTRACT

Out of various jobs care givers and physicians are the most stressful jobs specially dentistry. Root canal treatment is one main tasks of a dentist. In this study, we collected data related to difficulty degree of root canal treatment among general dentists in Ahvaz. Methodology: this study is an analytic epidemiologic study performed on 150 dentists available in dentistry offices in Ahvaz. Collecting data was carried out via questionnaire. Data were analyzed by SPSS software 22th version. In inferential level we used single-sample *t* test and independent *t* test. Results: dentists commented that difficulty degree of working on maxillary molars is average and on mandible molars is pretty average while working on other cases is not much. Out of different ages and occupational records, general dentists evaluated difficulty degree of working of root canal treatment as lower than average. Conclusion: difficulty degree of root canal treatment was estimated as low by Ahvaz's dentists. They believed that by getting older and have higher experience difficulty degree is reduced.

Keywords: Root Canal Treatment, Difficulty Degree, Ahavaz

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INTRODUCTION

“Stress” consists of all mental and social pressures. Although this word has been recently used, it has effect on whole life in all age ranges [1]. Researchers categorize stress in different samples but they all emphasize on job factors as main resources of stress [2].

Job stress is a form of interaction between personal and occupational condition in order to cope with occupational expectations. Besides harmful effect of job stress on human health, it has inappropriate effects on organizations and institutes. Stress is the first job burnout. Although job stress has some advantages such as increasing motivation and focus, its high rate can cause

diseases, hasty decision making, weak relationship with colleagues, decrease of creativity, lack of presence and abandoning the career [1]. Care giving and medical careers have been categorized as the most stressful jobs specially dentistry [3]. This stress is due to clinical needs, job environment and personal traits and mouth as a tiny job environment [4].

Dentist's professionals are also different together. The most stressful treatment is root canal treatment [3]. After anesthesia (if it was needed) root canal treatment includes following steps [5]; accessing to canal, determining working length, cleaning canals, fillings them, temporary restoration, permanent restoration. Due to root canal treatment nature (which is performed on indirect view of it) and complexity of root canals and other factors which have effect on result of root treatment, dentists and dentistry students and treatment professionals suffer from stressful

condition. In addition, when people cannot achieve what they aimed at and cannot fulfill their demands they gradually felt tense and stressful and if this condition is continuing so burnout happens [6-10].

Ayers *et al* (2008) [11] assessed stressful factors among Newzeland dentists when they faced with patients with trauma and children who needed root canal treatment and they found out their difficulty degree was average. Results of Radillo *et al* [12] illustrated that female dentists suffered form higher degree of difficulty.

Since dentists' knowledge and their proficiency in root canal treatment has direct relationship with job stress during root canal treatment, in this study we aimed at investigating difficulty degree of root canal treatment among general dentists in Ahvaz.

MATERIALS AND METHODS

This epidemiologic-analytical study was performed in Ahvaz dentistry offices in 2014-2015. 150 dentists available in dentistry offices in Ahvaz were selected. They needed to be dentists working in Ahvaz and have offices. Sampling method was census and was based on interview and direct observation. The office needed to be active and the dentist consent was necessary.

Information were recorded in 2 part questionnaire; in first part demographic information of physicians including age, gender, job experience et cetera were recorded and then, in second part, information related to difficulty degree of root canal treatment for dentists were recorded.

Questionnaire of root canal treatment job difficulty components was performed for measuring experienced difficulty degree during endodontic treatment and structure based on interviews with general dentists. After collecting all data of root canal treatment steps, this questionnaire was made. These steps were designed as questions and then face validity was approved by some endodontic professionals. This questionnaire had 31 questions with five scale (least=1 to highest=5). (appendix).

These questionnaires were filled by attendees as self-reporting. After filling questionnaire, they all

were submitted. After collecting data, data of the research were analyzed by SPSS 22th version by descriptive and inferential statistics. Single-sample t test and independent t test was used. Level of significance was $P \leq 0.05$.

RESULTS

Out of 150 dentists, 99 dentist were male (66%) and 51 dentist were female (34%). Average age of attendees was 42.82 ± 0.548 which was 42.76 ± 0.681 for men and it was 42.94 ± 0.934 for women.

Investigations illustrated that dentists were estimated difficulty degree of maxillary molars as 3.04 and for mandible molars was estimated as 2.94 and in other issues difficulty degree was low. Comparing difficulty degree in women with men, root canal treatment of patients with high blood pressure, root canal treatment of elderly, injection in anterior tooth, injection in posterior maxillary molar, diagnosis of pulp disease, diagnosis of peri-apical disease, and diagnosis of patients that need *citanest* indicated that differences is very low.

Male dentists estimated difficulty degree of working on maxillary molars around 2.96 and working on *intrapulpal* and providing access hole to upper and lower jaws premolars around 1.96 and in other cases similar to female dentists estimated the work least difficult while female dentists estimated difficulty degree of working on mandible molars around 1.96 but they estimated other cases with less difficulty degree and least degree of difficulty. More accurate information about difficulty degree in each root canal treatment canal were indicated in table 1 and 2.

Studies cleared that there is significant difference between female and male dentists in difficulty degree of working on mandible molars ($P=0.006$), access hole and cleaning ($P=0.001$), formation ($P=0.008$), treatment of anterior root canal and maxillary premolar ($P=0.020$), determining working length of anterior teeth and upper and lower jaws premolar on graph ($P=0.000$), providing graph during work from premolar teeth and anterior mandible ($P=0.006$), providing graph during work from premolar teeth and anterior maxillary ($P=0.012$), injection of antra pulpal ($P=0.036$), facing with thruma disease ($P=0.026$). Other information about comparing results of gender related data among

Table 1: mean, standard deviation, and standard error for general dentists in job difficulty of root canal treatment (part 1)

	Total			male			Female		
	Mean	standard deviation	standard error	mean	standard deviation	standard error	Mean	standard deviation	standard error
Working of maxillary molars generally	0.073	0.518	3.177	0.801	0.081	2.97	0.059	0.722	3.04
Working of mandible molars generally	0.087	0.623	3.177	0.8	0.08	2.818	0.062	0.762	2.94
Access hole and cleaning	0.094	0.672	2.706	0.991	0.1	2.242	0.075	0.92	2.4
Formation	0.103	0.737	2.235	0.892	0.09	2	0.069	0.848	2.08
Filling	0.1	0.713	2.177	0.839	0.084	2.03	0.065	0.799	2.08
Providing access hole from healthy tooth cover	0.119	0.853	2.412	0.74	0.074	2.394	0.063	0.777	2.4
providing access hole from prepared tooth for cover	0.094	0.672	2.706	0.825	0.083	2.515	0.064	0.78	2.58
Treating anterior root canal and maxillary perimolar	0.094	0.672	2.706	0.924	0.093	2.394	0.07	0.857	2.5
Treating anterior root canal and mandible perimolar	0.081	0.576	2.706	0.603	0.061	2.606	0.048	0.593	2.64
Providing graph during work on anterior maxilla	0.083	0.594	2.647	0.656	0.066	2.576	0.051	0.634	2.6
providing graph during work on anterior mandible	0.083	0.594	2.647	0.558	0.056	2.454	0.047	0.576	2.52
Determining working length of anterior teeth and upper and lower jaws on anterior teeth	0.083	0.594	2.647	0.873	0.087	2.181	0.067	0.817	2.34
Providing graph during work from premolar teeth and anterior mandible	0.086	0.612	2.529	0.732	0.074	2.212	0.058	0.708	2.32
Providing access hole of anterior teeth in upper and lower jaws	0.091	0.651	2.235	0.831	0.083	2.273	0.063	0.772	2.26

Table 2: mean, standard deviation, and standard error for general dentists in job difficulty of root canal treatment (part 2)

Steps of root canal treatment	Female			Male			General		
	standard error	standard deviation	Mean	standard error	standard deviation	Mean	standard error	standard deviation	Mean
Providing graph during work from premolar teeth and anterior maxilla	0.08565	0.61165	2.4706	0.76082	0.07647	2.1818	0.05917	0.72464	2.28
Providing graph by digital sensors	0.08484	0.60585	2.4118	0.71168	0.07153	2.2727	0.05542	0.67873	2.32
Inferior alveolar block injection	0.0696	0.49705	2.4118	0.78246	0.07864	2	0.0591	0.7238	2.14
Providing access hole to upper and lower jaws premolars	0.07715	0.55094	2.2353	0.6301	0.06333	1.9697	0.05026	0.61557	2.06
Injection of antrapulpal	0.09113	0.65079	2.2353	0.76204	0.07659	1.9697	0.06	0.73485	2.06
Injection of ligament periodontal	0.11099	0.79261	2.1765	0.74729	0.07511	2.1515	0.06209	0.76043	2.16
Root canal treatment on patients with diabetes	0.10847	0.7746	2	0.78365	0.07876	2.2424	0.06421	0.78646	2.16
Facing with traumatic patients	0.10847	0.7746	2	0.66728	0.06706	2.2727	0.05837	0.71485	2.18
Facing with children who need root canal treatment	0.12113	0.86501	2.1765	0.72075	0.07244	2.303	0.06305	0.77225	2.26
Root canal treatment in male and comparing them with females	0.09412	0.67213	1.7059	0.71168	0.07153	1.7273	0.05685	0.6963	1.72
Root canal treatment on patients with high blood pressure	0.09412	0.67213	1.7059	0.71168	0.07153	1.7273	0.05685	0.6963	1.72
Root canal treatment on elderly	0.08065	0.57599	1.7059	0.67695	0.06804	1.697	0.05246	0.64246	1.7
Injection in anterior teeth	0.08319	0.59409	1.6471	0.61067	0.06137	1.4545	0.0498	0.60998	1.52
Injection in maxillary posterior teeth	0.09843	0.70294	1.5294	0.65889	0.06622	1.4545	0.05493	0.67277	1.48
Diagnosis of pulp disease	0.09772	0.6979	1.5882	0.81384	0.08179	1.6364	0.06322	0.77434	1.62
Diagnosis of periapical disease	0.09772	0.6979	1.5882	0.70118	0.07047	1.5758	0.05697	0.69774	1.58
Diagnosis of patients that need citanest	0.08565	0.61165	1.4706	0.65889	0.06622	1.5455	0.05243	0.64214	1.52

Table 3: results of independent t test for general dentists in job difficulty raised by root canal treatment

P-Value	Root canal treatment steps	P-Value	Root canal treatment steps	P-Value	Root canal treatment steps
0.372	Facing with children who need root canal treatment	0	determining working length of anterior teeth and upper and lower jaws on graph	0.097	Working on maxillary molars generally
0.859	Root canal treatment in male and comparing them with females	0.006	providing graph during work from premolar teeth and anterior mandible	0.006	Working on mandible molars generally
0.859	Rt on patients with high blood pressure	0.762	providing access hole of anterior teeth in upper and lower jaws	0.001	Access hole and cleaning
0.936	Rt on elderly	0.02	providing graph during work from premolar teeth and anterior maxilla	0.008	Formation
0.067	Injection in anterior teeth	0.236	Providing graph by digital sensors	0.226	Filling
0.52	Injection in maxillary posterior teeth	0.001	<i>inferior</i> alveolar block injection	0.895	providing access hole from healthy tooth cover
0.72	Diagnosis of pulp disease	0.012	providing access hole to upper and lower jaws premolars	0.156	providing access hole from prepared tooth for cover
0.918	Diagnosis of periapical disease	0.036	Injection of antrapulpal	0.02	Treating anterior root canal and maxillary perimolar
0.501	Diagnosis of patients that need cytanist	0.85	Injection of ligament periodontal	0.331	Treating anterior root canal and mandible perimolar
		0.074	Root canal treatment on patients with diabetes	0.516	Providing graph during work on maxillary molar teeth
		0.026	Facing with traumatic patients	0.052	Providing graph during work on mandible molar teeth

general dentists for degree of difficulty in root canal treatment was were indicated in table 3.

Mandible molars ($P=0.006$) in different ages, general dentists estimated difficulty degree stemmed from root canal treatment is lower than average. In studying different ages it was illustrated that there is significant different in maxillary molars ($P=0.009$), access hole from prepared teeth for cover ($P=0.006$), determining working length of anterior teeth and jaws premolar on graph ($P=0.000$), providing graph during work from premolar teeth and anterior mandible ($P=0.022$), providing graph during work from premolar teeth and anterior maxillary ($P=0.009$), providing graph with digital sensors ($P=0.001$), providing access hole of upper and lower jaws' premolars ($P=0.004$), injection of antrapulpal ($P=0.023$), injection of ligamane priodontal ($P=0.10$), root treatment on patients with diabetes ($P=0.014$), facing with thruma disease ($P=0.009$), facing with children who need root canal treatment , diagnosis of pulp disease ($P=0.000$), diagnosis of periapical ($P=0.000$) and diagnosis of patients than need citanest ($P=0.000$).

From aspect of general dentists' job experience who had less than 10 years, estimated degree of difficulty of root canal treatment as lees and that

though that difficulty degree of working on maxillary molars (3.17) is average, working on mandible molars (2.88), treating anterior root canal and mandible pri molars (2.88), providing graph during work from maxillary molars (2.88), so they estimated them with average difficulty degree. General dentists with 11 and 20 job experience estimated that difficulty degree of root canal treatment is low while they estimated difficulty degree of working on maxillary molars (2.03) and mandible molars [3] is average. General dentists with job experience higher than 21 estimated that difficulty degree of root canal treatment is low and working on mandible molars, providing access hole from healthy tooth cover, providing access hole from prepared teeth for coverage, treating anterior root canal treatment and mandible perimolar are approximately average (2.83).

Studying job experience illustrated that there is significant difference in maxillary molars ($P=0.035$), access hole from healthy teeth cover ($P=0.018$), treating anterior root canal treatment and mandible perimolar ($P=0.000$), providing graph during work from maxillary molars ($P=0.000$), providing graph during work mandible molars ($P=0.000$), providing graph with digital

sensors ($P=0.008$), providing access hole of upper and lower jaws' premolars ($P=0.000$) injection of antrapulpal ($P=0.049$) in different job experience level.

DISCUSSION

Dentistry has been categorized as one of the most difficult occupations [13]. Thus they may suffer from acute stress, failure of marriage, substance abuse and committing suicide [14]. One study on difficult condition of dentists indicated that more than half of dentists experienced acute stress in their job [15]. In addition, it was clarified that job difficulty has some extreme stimulations such as inconsistency, high pressure of work, patients delay and anxious patients [16].

In our study it was cleared that dentists commented that difficulty degree of working on maxillary molars is average (3.04) and on mandible molars is pretty average while working on other cases is not much (2.94). And they believed in other cases difficulty degree is less. In compare to female dentists, male dentists estimated that degree of difficulty is very low in root canal treatment of patients with high blood pressure, root canal treatment of elderly people, injection in anterior teeth, injection of posterior maxilla, diagnosis of pulp disease, diagnosis of peri apical disease, and diagnosis of patients that need citanest.

Male dentists estimated that degree of difficulty is pretty average in working on maxillary molars (2.96) while it was pretty low in injection of antrapulpal and access hole of upper and lower jaw premolars (1.96) and in other cases they agreed with female dentists and believed there are low degree of difficulty. However female dentists believed working on maxillary molars and mandible molars is average (3.17) and injection of antrapulpal and access hole of upper and lower jaw premolars is low (1.96). And in other cases they estimated level of difficulty degree very low. In different ages, general dentists estimated difficulty degree as low and it is right about all ages. In different job experience, general dentistry with less than 10 years, difficulty degree of root canal treatment was low and working on maxillary molars (3.17) was average and working on mandible molars was (2.88), treating anterior root canal treatment and mandible perimolar was 2.88, and providing graph during work from

maxillary molars was 2.88 which is average. General dentists with job experience between 11-20 years degree of difficulty of root canal treatment was estimated as low and working on maxillary molars (3.03) and working on mandible molars was [3] which are as average. General dentists with job experience higher than 21 years stated degree of difficulty of root canal treatment is low and they commented that only working on mandible molars, providing access hole from healthy teeth cover, access hole from prepared teeth for cover, treating root of anterior teeth and mandible peri molars were average (2.83).

It has been approved that difficulty of dentistry has some side effects such as mental and physical problems, reduction of self-confidence and learning ability [17]. Rada and Johnson-Leong [18] concluded that job difficulty can have side-effects such as anxiety, clinical depression, reduction of self-confidence, physical symptoms such as haddock and backache. But this difficulty is reduced when experience is improved. This study results is compatible with our study because it approved that by having more experience in dentistry difficulty of job is decreased and this reduction is significantly different in root canal treatment.

Compatible with our study, Bourassa and Baylard [19] in a study on Canadian dentists indicated that by age and experience increase difficulty of dentistry is reduced. They stated that by age increase, dentists experience less elaboration during treatment. So, endodontic professional has years of experience in treatment and therapeutical activities. It is obvious that they don't suffer from high degree of job difficulty. In this study it was illustrated that by age increase, dentists including male and female, experience less elaboration during treatment of root canal treatment difficulty is significantly different considering age and experience.

In Ayers *et al*, [11] it was indicated that retreatment, facing with traumatic patients and facing with children that need root treatment, difficulty of job was average from dentists' point of view but it was cleared that dentists believed that difficulty of working on maxillary molars is average while it is low in other cases. However difficulty of working on children root canal treatment is average for dentists younger than 30 and it is low in older dentists.

Radillo *et al* [12] concluded that female dentists experience higher job difficulty in compare to male dentists. But in this study female dentist believed difficulty of working on maxillary molars and mandible molars is average (3.17) and injection of antrapulpal and providing access hole of upper and lower jaws was low (1.96). In other cases, similar to men they believed job difficulty is low. Simon *et al* [20] indicated that injecting anesthesia make the job less difficult.

In other research by Roth *et al* [21] considered age as an effective variable in job difficulty. So that in their study it was illustrated that by age increase job experience is enhanced so the dentist is more calm and skillful in treatment.

Gorter *et al* [22] indicated that in Nethearand dentists have problem in treatments that needs contact and touch which is compatible with our results. So difficulty of working on children root canal treatment is average for dentists younger than 30 and it is low in older dentists.

CONCLUSION

In this study it was illustrated that Ahvaz dentists believed that job difficulty of root canal treatment is low in most cases and when they get older and when they are more experienced the level of job difficulty is significantly reduced.

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