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COMPREHENSIVE COGITATION ON FALLOUTS OF ESSENTIAL-TREMOR IN DENTISTRY IN ASSOCIATION WITH THE FIDELITY OF LABOUR AMONG DENTAL SURGEONS ACROSS TAMILNADU: A CROSS-SECTIONAL STUDY

Amrish D[1], Rajmohan M[2], Sindhu R[3], Dinesh Dhamodhar[2], Sathiyapriya S[3], Prabu D[4], Bharathwaj V V[3], Vishali M[5]

[1]Bachelor of dental surgery, Department of Public Health Dentistry, SRM Dental College, Ramapuram, Chennai India.

[2]Reader, Department of Public Health Dentistry, SRM Dental College, Ramapuram, Chennai India.

[3]Senior lecturer, Department of Public Health Dentistry, SRM Dental College, Ramapuram, Chennai India.

[4]Professor and Head, Department of Public Health Dentistry, SRM Dental College, Ramapuram, Chennai India.

[5]Postgraduate Student, Department of Public Health Dentistry, SRM Dental College, Ramapuram, Chennai India.

ABSTRACT:

BACKGROUND:

Essential Tremor is the most common neurological disorder. However, dentists may have a higher risk of exposure to essential tremors in long way practice, and it also interferes with their perfection and accuracy of work.

AIM:

This study aims to find out the prevalence of essential tremors and their effect on the perfection of work among dental professionals in Tamilnadu.

MATERIALS AND METHOD:

A cross-sectional study was done using a self-validated questionnaire which consists of 16 close-ended and open-ended questions. This study was conducted among 100 practising dental professionals aged 25 to 50 in Tamilnadu, India, using a double-stage random sampling method. Statistical analysis was done using descriptive statistics and the Chi-square test, where p-value less than 0.05 was considered significant.

RESULTS:

The prevalence of essential tremors among dentists was 23%, and it had a positive association with biological age (P value of 0.002) and years of clinical experience (P value of 0.02). Also

noted that rhythmic shaking of hands had a strong association with iatrogenic disease, mainly accidental pulp opening (P value of <0.001) and other discomforts to the patient as well (P value of < 0.001).

CONCLUSION:

Dentistry is a healing profession, and dentists are also more prone to various occupational hazards. Keeping in mind that "do no harm" is no longer possible with hand tremors. So, etiological factors associated with tremors should be ruled out, and with proper management, the person can be medically fit and start practising, which is entirely based on the dentist and their patients' confidence and comfort level.

Keywords: essential tremors, dentists, the perfection of work, lifestyle changes, occupational hazards.

INTRODUCTION:

Essential Tremor is a benign, familial, monosymptomatic neurological Disorder[1.] It causes involuntary rhythmic shaking of almost all parts of our body. Effective treatments of essential tremors are also severely limited [1]. It is studied that drugs like Propranolol decrease essential Tremor by 20%, and the treatment called Deep Brain Stimulation in thalamic nucleus ventrointermedius, shortly known as DBS, reduces it by 90% [2.] . Many people also stop undergoing treatments due to poor efficacy of the treatment or side effects [3.]

It is genetically inheritable, and studies show that Tremor was bimodally distributed in the age range of 15 years. The severity of arm tremors assessed by Archides scale has helped to conclude that tremors increase with advancing age and also the duration of tremors. Both men and women are affected in equal proportions[4].In the army it was found that females have more hand steadiness compared to males, which can be indirectly associated with their lifestyle[5]. It is an autosomal dominant type of inheritance [6]. It is also evident like Tremor is induced after consumption of alcohol [7]. It is found that 19.2% of people with Essential Tremor is associated with Parkinson's disease [8].

It is found that essential tremors have an effect on daily activities like drinking, handwriting, eating, and so on[9].Tunnel Carpel syndrome also happens in persons with repetitive movements like typing [10]. In the United States, it has been recently found that there is occupational mercury exposure in dentists during amalgam fillings [11]. And it is a known fact that mercury vapour exposure leads to an increased tremor frequency [12]. So it is relatable that dentists have a high risk of essential tremors. Even though an occupational hazard in dentistry is due to chronic exposure to toxic compounds, 28.5% of people develop associated factors of Parkinson's disease along with essential tremors [13.] Literature pieces of evidence show that a dentist has hand tremors which were disturbing in his clinical works, and he undergoes DBS treatment and overcomes tremors. Hence, it salvages a flourishing dental practice [14]. Hence this study's objectives focus on the prevalence and effects of essential tremors in the work perfection of dental surgeons practising across Tamilnadu, India.

MATERIALS AND METHOD: -

A questionnaire-based cross-sectional study was conducted among dental surgeons aged 25-50 who practice in various districts of Tamilnadu, India. The double-stage random sampling method was used for the selection of study participants where initially 4 districts are selected randomly followed by random selection of 25 practicing dentist in each district. The ethical approval for this study was obtained from the ethical committee from **the** Department ofPublicHealth And Dentistry-SRM dental college, Ramapuram, Chennai.

The sample size was 100 practising Dental Professionals. The inclusion criteria include only the dental professionals doing their clinical practice, and those who are personally willing to participate and gave informed consent. Exclusion criteria include those who quit practicing dentistry and those working only in other areas like teaching, research and development.

The self-validated questionnaire consists of three parts, including Personal Data followed by association of tremors in perfection in dentistry and the objectives done by a dentist to rectify tremors. The questionnaire includes the determination of factors which lead to Tremors which may be genetic or due to alcohol intake. It also determines the association with the loss of perfection in clinical practice, which may lead to iatrogenic injury, discomfort to the patients, and pulp opening too. Content validation of the questionnaire was also done.

For data analysis SPSS (IBM SPSS Statistics for Windows, Version 26.0, Armonk, NY: IBM Corp. Released 2019) is used. Significance level is fixed as 5% ($\alpha = 0.05$). Statistical methods include descriptive statistics, and to compare proportions Chi-Square test was applied; if any expected cell frequency was less than five, then Fisher's exact test was used. P value less than 0.05 was considered significant.

RESULT:

The filled questionnaires were gathered from the dental personnel. Out of the 100 participants, there were 91 males and 09 females.

Table 1- Descriptive analysis of the prevalence of essential tremors and several factors relating to essential tremors.

		N	%
Do you feel rhythmic shaking of hands during any clinical work?	Yes	23	23.0%
	No	77	77.0%
	Total	100	100.0%
How many years have you been practising dentistry?	0-5 years	19	19.0%
	5-10 years	43	43.0%

	10-20 years	32	32.0%
	20-30 years	6	6.0%
	Total	100	100.0%
Do you lose perfection in work as age progresses?	Yes	58	58.0%
	No	42	42.0%
	Total	100	100.0%
Does any of your family members have a similar problem?	Yes	13	13.0%
	No	87	87.0%
	Total	100	100.0%
Do you consume alcohol?	Yes	85	85.0%
	No	15	15.0%
	Total	100	100.0%
Did you sort any discomfort at your patient's chairside?	Yes	66	66.0%
	No	34	34.0%
	Total	100	100.0%
Have you done any accidental pulp opening?	Yes	03	3%
	No	97	97.0%
	Total	100	100.0%
Have you made any sort of iatrogenic injury to your patients?	Yes	67	67.0%
	No	33	33.0%
	Total	100	100.0%
Have you made any lifestyle changes like YOGA to increase perfection in your work?	Yes	70	70.0%
	No	30	30.0%
	Total	100	100.0%
Have you consulted a doctor about this problem?	Yes	6	6.0%
	No	94	94.0%
	Total	100	100.0%

Have you taken BETA-BLOCKERS like PROPANOLOL for this condition?	Yes	0	0.0%
	No	100	100.0%
	Total	100	100.0%
Have you taken ANTICONVULSANTS like PRIMIDONE to increase your hand stability?	Yes	4	4.0%
	No	96	96.0%
	Total	100	100.0%
If yes, for how many years?	Two months	1	25.0%
	Three months	1	25.0%
	Few days	1	25.0%
	Nil	1	25.0%
	Total	4	100.0%
Have you planned for deep brain stimulation surgery?	Yes	3	3.0%
	No	98	98.0%
	Total	100	100.0%

Moreover, as per table 1, on deep perusal of the details furnished by the recipients, 43% of dentists have about 5-10 years of experience, and 32% have 10-20 years of experience in their clinical work. 23% of those practising dentists feel shaking hands during clinical work. 58% of dentists feel that they lose perfection as age progresses. 17% of them have family related history, and 85% of them consume alcohol. 66% of them caused some sort of discomfort to patients. 3% of them had done accidental pulp openings. 66% of them had caused some sort of iatrogenic injury to patients. 70% of them had made lifestyle changes like Yoga to overcome tremors. None of them had taken Beta Blockers, and 4% had taken Anti-convulsants like Primidone, out of which 25% for a few days, 25% for two months and 25% for a course of 3 months, respectively. 3% of them had planned for Deep Brain Stimulation Surgery.

Table 2- Association between essential tremors and their possible etiological factors

	Do you feel rhythmic shaking of hands during any clinical work						p-value
	Yes		No		Total		
	N	%	N	%	N	%	

How many years have you been practising dentistry?	0-5 years	02	4.8%	17	29.3%	19	19.0%	0.023
	5-10 years	12	28.6%	31	53.4%	43	43.0%	
	10-20 years	23	54.7%	09	15.5%	32	32.0%	
	Above 20 years	5	11.9%	1	1.8%	6	6.0%	
	Total	42	100.0%	58	100.0%	100	100.0%	
Do you consume alcohol?	Yes	37	90.2%	48	81.3%	85	85.0%	0.071
	No	4	9.8%	11	18.7%	15	15.0%	
	Total	41	100.0%	59	100.0%	100	100.0%	
As age progresses, hand shakiness has	Yes	53	96.7%	05	11.1%	58	58.0%	0.002
	No	02	3.3%	40	88.9%	42	42.0%	
	Total	55	100.0%	45	100.0%	100	100.0%	

According to table 2, while comparing the essential tremors with their possible etiological factors, 54.7% of the dentists who had essential tremors fall between the category of having 10-20 years of dental clinical practice and 28.6% between 5-10 years and 11.9% above 20 years of dental practice and it is evident that dentists who had essential tremors had an association with their years of experience in clinical practice and had their p-value is 0.023 which is significant. Also, in dentists, as age progresses, their hand shakiness has increased significantly as their p-value is 0.002, which was also statistically significant.

Table 3- Association between Essential tremors and their clinical performance

		Do you feel rhythmic shaking of hands during clinical work						p-value
		Yes		No		Total		
		N	%	N	%	N	%	
Have you made any sort of iatrogenic injury to your patients?	Yes	43	64.7%	24	75%	67	67.0%	0.035
	No	25	35.3%	8	25%	33	33.0%	
	Total	68	100.0%	32	100.0%	100	100.0%	
Have you done any	Yes	03	100.0%	00	0%	03	3.0%	<0.001

accidental pulp opening?	No	00	0%	97	100.0%	97	97.0%	
	Total	03	100.0%	32	100.0%	100	100.0%	
Did you sort any discomfort at your patient's chairside?	Yes	64	97%	2	6%	66	66.0%	<0.001
	No	02	3%	32	94%	34	34.0%	
	Total	66	100.0%	34	100.0%	100	100.0%	

Table 3 indicates that people with essential tremors had caused iatrogenic injury to their patients with a significant p-value of 0.035. Dentists who made accidental pulp openings in patients had a strong association with essential tremors, and the p-value was less than 0.001. It was evident that dentists with essential tremors had caused some sort of discomfort to their patient's chairside, and the p-value less than 0.001 which shows strong association.

DISCUSSION:

The importance of this research apparently highlights the fact that the dental speciality is a taxing job. It is heartening that dental surgeons are immensely prone to essential tremors associated with hand shakiness. It was already found that 19.2% of essential tremors were associated with Parkinson's disease. It actually affects our daily activities like writing and minute work. In this study, according to Table -1, it was found that 23% of the clinicians feel Hand shakiness which is shortly Known as Tremors, during their clinical work. It was autosomal dominant and genetically inheritable, too [6]. So it could be passed on from generation to generation.

According to Table -1, it was found that 13% of the sample had a family history. Although it was passed through genetics[7], it had some other attributing causative etiological factors, which include the years of practising clinical dentistry and also the increasing biological age of the dentist. Here the factor of years of practising dentistry indicates the duration of exposure to Mercury in the clinical during amalgam fillings. It was already found that Mercury increases the tremor frequency. And according to Table -2, it was evident that 43% of dentists who had essential tremors fall between the category of having 10-20 years of dental clinical practice and 23% fall under the category of having 5-10 years of dental clinical practice.

Literature shreds of evidence by Doctors Guy Giacopuzzi, Melanie Lising, and Casey H Halpern had shown that a dentist with essential tremors for many years was doing his clinical practice. As age progresses, he made some lifestyle changes trying to overcome it, followed by medications like Beta Blockers and Primidone. He told that it had a nice controlling effect on tremors [13]. But as age progresses, he can't sustain those essential tremors being a dentist. So he had undergone Deep Brain Stimulation Surgery and then rectified it. It was placed in his thalamus region, which he will turn on only during clinical practice for improved perfection [13]. Data under table -2 shows that dentists with essential tremors who consume alcohol have a p-value of 0.071, and dentists who had felt increased hand shakiness as age progressed had a significantly low p value of 0.02.

According to the data provided in Table -3, it was evident that 67% of the dentists with essential tremors with a p-value less than 0.001 had caused iatrogenic injury to patients. Furthermore, 66% of dentists with essential tremors with a p-value less than 0.001 had caused some sort of discomfort to patients. Literature pieces of evidence show that a neurosurgeon had caused some discomfort to his patients during surgery due to essential tremors, which made him make some lifestyle changes at first. Then he took medications to overcome tremors. After its significant Ill effects during surgery, it made him undergo Deep-Brain Stimulation Surgery [14].

Pieces of evidence show that yoga events conducted by a physical therapist to patients with essential tremors led to relaxation and increased their steadiness. This study also shows that 70% of dentists with essential tremors undergo lifestyle changes like Yoga to calm down their minds and increase perfection in work [15]. Our misfortune was that the incidence of essential tremors in dentists is rarely documented. So with this documentation, it was known that it is a serious issue to be sorted out by each and every dentist by undergoing some sort of lifestyle changes, followed by medications or deep brain stimulation surgery to prevent some serious injury to patients.

LIMITATIONS:

Since the sample size of this cross-sectional study was small, the generalizability of this study is low. This present study was a questionnaire survey; there may be chances of under or overestimated responses. In addition, the study was conducted among dentists there may be an information bias.

CONCLUSION:

Although this study aimed at establishing the prevalence rate of essential tremors in dentists, it also potentiates the risk of acquiring iatrogenic injury and discomfort to patients. Hence it was hypocrisy. Rather, increasing age and years of clinical practice stand as an attributive cause of these essential tremors. Hence this study concluded that dentists knowing the seriousness of essential tremors in clinical practice, must undergo lifestyle changes or medications to rectify them and prevent the ill effects of essential tremors in clinical practice. Therefore, keeping in mind that" do no harm" should be the main motto of healing professionals.

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