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Dental Science

SURVEY ON KNOWLEDGE OF DENTAL STUDENTS ON HARD AND SOFT SPLINTS.

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ABSTRACT **INTRODUCTION:** Occlusal splint therapy is the most frequently performed treatment modality for temporomandibular joint disorder, myofascial pain associated with bruxism and clenching induced headache and earache . Importance of the splint therapy is to help practitioners adjust the relationship between the jaws either by suppressing blockage of teeth to relax muscle or to reduce painful excess intraarticular pressure derived from degenerative diseases . **AIM:** Aim of this study is to evaluate the knowledge of dentist towards hard and soft splint. **METHODS:** A sum of 150 dentist from internships , post graduate, senior practitioners were surveyed regarding the knowledge of hard and soft splint. A well organized and administered questionnaire including 20 questions was used to extort the responses. The study was conducted during 2020 . Statistical analysis was done using IBM SPSS VERSION 21.0. **RESULT:** In this research majority of participants are post graduates . Study uncloak that 90.7 % of participants are aware of hard and soft splint and 10 % of the dentist are unaware about soft and hard splint. **CONCLUSION:** The present survey concluded that majority of the dentist are aware of the importance of occlusal splints but there revolves a minor ignorance and lack of knowledge among few practitioners. Thus, this study request to reinforce these in practice by giving additional education towards the outcome of improper treatment. We hope that the result of present study may serve as a guide for further studies.

KEYWORDS : Occlusal Splints, Hard And Soft Splints, Bruxism, TMJ Disorder, Sleep Appliances.

INTRODUCTION:

Occlusal splint therapy being the most prominent treatment modality for temporomandibular joint (TMJ) disorder, myofascial pain associated with bruxism induced headache and earache etc.[1-3] the splint treatment modality acts in the mechanism of relieving muscles and alleviate pain so that the intraarticular pressure is relieved, [4]. Which can be caused due to degenerative disease and can be also used in cases of TMJ disc rearrangement [5]. Among the two types of splint, hard and soft the former is most efficient in patients with masticatory disorders but yet the later is preferred due to its ease of fabrication and cost effectiveness [6] Several literatures Show an higher efficacy rate (70-90%) when patients suffering from the TMJ disorders are subjected to splint therapy . Patient who neglect the treatment options often subject themselves to complication such as insomnia and sleep disturbances, premature wear and tear of the teeth, asymmetrical muscle growth and tinnitus etc. The success of treatment planned and patient satisfaction is often affected by the lack of knowledge of the practitioner on areas of TMJ disorders splint modalities and improper treatment planning due to lack of proper dental and medical history of the subjects [7-9].Literature doesn't have much researches in this area , therefore we planned this study in order to evaluate the knowledge of dentist towards hard and soft splints and to reinforce these in practice by giving additional education towards the outcome of improper treatment.

MATERIALS AND METHODOLOGY:

The cross-sectional questionnaire survey was conducted amongst the dental students to assess their knowledge towards hard and soft splints. A total of 150 dental students from different dental colleges in Chennai, India were entered into the study. The study was started on 16th August, 2020 and ended on 8th September,2020.

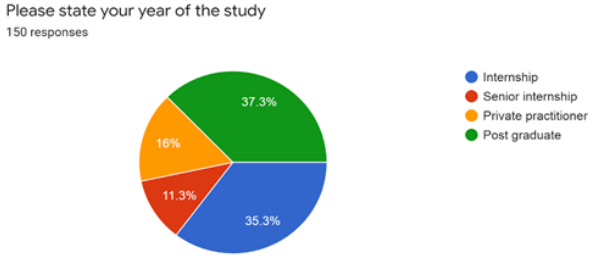
A 20-item questionnaire was developed explaining the purpose of the survey and requesting participation. The questionnaire were prepared on the basis of the knowledge about hard and soft splints in dental practice. It was designed as online-based survey (Google forms) and distributed to the samples. The participants expressed their level of perception by choosing an option provided for each question and were assured that the information provided by them is kept confidential. Subsequently, the obtained data were submitted to statistical analysis using IBM SPSS VERSION 21.0 for validation.

RESULT :

Our sample consist of 150 dentist comprising of post graduates, private practitioner, internships ,all other under graduates were excluded from the study . The statistical analysis of the study was done with help of IBM SPSS VERSION 21.0. Out of 150 participants, most of them were post graduates (37.3%). In this study, 90% of dentist are well aware of soft and hard splint , 10 % of the dentist are unaware about soft and hard splints. Positive finding of the study is, almost all the questions were responded accurately. Higher percentage of 44% of dentist were unsure (may be) of occlusal splint in the management of bruxism but surprisingly 48.7 % of dentists responded that occlusal splint is mandatory for bruxism , this reveals the positive knowledge in this area and only moderate percentage of dentist(33.3%) are familiar that anterior repositioning splint is also called disc recapturing splint , this reveals that comparatively a lack of knowledge in this area .

Characteristics and approaches of dentist towards hard and soft splint regarding to its treatment modalities, 82.0% of dentist affirmed that occlusal splint is used for myofascial pain , bruxism, TMJ disorders ,6.7% of dentist affirmed that that they use it for myofascial pain , 8.0 % of dentist affirmed that they use it for bruxism , 5 % of dentist affirmed that they use it for TMJ disorder. In the management of TMJ disorder , 22.0 % of the participants asserted that hard splint is more effective than soft splint , 10.7 % of the dentist asserted that hard splint is not more effective than soft splint .

Regarding indication of splint therapy , 5.3 % of dentists use to prevent tipping or drifting of teeth , 8.7 % dentist use to stabilize the teeth with increased mobility that have not responded to occlusal adjustments and periodontal treatment , 13.3 % of dentist use in case of myofascial pain and TMJ disorder , 72.7 % of them answered all of the above as the indication of splint therapy .When interrogated the dentist about the age recommended to undergo splint therapy , 66.7% of dentist mentioned that it is recommended at age of (18 – 65) ,16.0 % of dentist mentioned that it is from the age of (12-70) , 8.7% of dentist mentioned that it is from the age of (30-70) and (20-60).



(Fig - 1)

QUESTIONS	OPTIONS	FREQUENCY	PERCENTAGE %
1.occlusal splint therapy is used for ?	Myofascial pain	10	6.7
	bruxism	12	8.0
	TMJ disorder	5	3.3
	All the above	123	82.0
2.Are u aware in which condition hard and soft splint ?	Yes	136	90.7
	No	14	9.3
3.which type of splint do u prefer for treating myofascial pain	Hard splint	19	12.7
	Soft splint	22	14.7
	Depending on the condition	109	72.7
4.Is hard splints are more effective than soft splint in the management of TMJ disorder?	Yes	33	22.0
	No	16	10.7
	Depending on the condition	101	67.3
5.Does occlusal splint mandatory to treat bruxism?	Yes	73	48.7
	No	11	7.3
	May be	66	44.0
6.Can a occlusal used to treat headache due to TMJ pain?	Yes	59	39.3
	No	23	15.3
	May be	68	45.3
7. What is the minimum duration of splint therapy ?	Minimum 6 months	46	30.7
	Minimum 3 months	48	32.0
	Discontinued anytime after the desired result is obtained	56	33
8. Do you prefer additional therapy adjunct to splints	Yes	130	86.7
	No	20	13.3
8(a)If your answer is YES , what do u prefer?	Thermal therapy	6	4.0
	Pharmacological therapy	31	20.7
	Both a and b	93	62.0
	None of the above	6	4.0
9.For the muscular hyperactivity ,what do u prefer?	Soft splint	61	40.7
	Hard splint	71	47.3
	None of the above	18	12.0
10. What are the uses of splint?	Alters the occlusal equillibrium	10	6.7
	Changes the afferent impulse of CNS	14	9.3
	Improve vertical dimension	8	5.3
	All of the above	118	78.7
11. An occlusal equillibrium is ?	Reduction of all contact tooth surface that interferes with completely seated condylar position	13	8.7
	Selective reduction of tooth structures that intereferes with lateral excursion	22	14.7
	Harmonization of anterior guidance	6	4.0
	Elimination of all posterior tooth structures that infere with protrusive excursion	3	2.0
	All of the above	106	70.7
12. Indication of splint therapy ?	To prevent tipping or drifting of teeth	8	5.3
	In case of myofascial pain and tmj disorder	20	13.3
	To stabilize the teeth with increased mobility that have not responded to occlusal adjustment and periodontal treatment	13	8.7
	All of the above	109	72.7
13.Anterior repositioning splint is also called as ?	Disc capturing splint	50	33.3
	Anterior stop	59	39.3
	Muscle reconditioning splint	21	14.0
	Stabilizing splint	20	13.3
14. One full coverage stabilization occlusal splint uses an incisal and two separate molar disoccluded elements called as	Tripod design	113	75.3
	Eccentric design	15	10.0
	Bilateral configuration	16	10.7
	Quadrilateral configuration	6	4.0
15. what is the minimum duration recommended mandatory for sleep appliance _____ hours a day	Less than 4 hours a day	8	5.3
	6 -8 hours a day	119	79.3
	Full time a day	12	8.0
	10-12 hours a day	11	7.3
16. permissive splint are also called as _____.	muscle deprogrammer	103	68.7
	Directive splint	25	16.7
	Hydrostatic splint	15	10.0
	Soft rubber splint	7	4.7
17.average force generated by normal chewing on second molar _____ N	800N	76	50.7
	390N	55	36.7
	288N	15	100.0
	105N	4	2.7
18.At which age patient are recommended to undergo splint therapy ?	18-65	100	66.7
	12-70	24	16.0
	30-70	13	8.7
	20-60	13	8.7
19.how many teeth should be there in the oral cavity in each quadrant to undgo splint	Minimum 6 natural teeth in each quadrant	75	50.0
	Minimum 5 natural teeth in each quadrant	43	28.7

therapy ?	Minimum 3 natural teeth in each quadrant	26	17.3
	Minimum 1 natural teeth in each quadrant	6	4.0
20.michigan splint is a _____ type of splint	Stabilizing splint	56	37.3
	Anterior repositioning splint	72	48.0
	Muscle reconditioning splint	16	10.7
	Nocturnal protection splint	6	4.0

(Fig - 2)

DISCUSSION:

Many researchers in their survey studies found diverse difference in the use of Occlusal splint therapy management. Theoretically more knowledge is required by the practitioner yet ignorance clinically of administration of the same noted . The background of this survey is to analyse dentist's possession of appropriate knowledge, use of appropriate splint type and its indications and effective treatment modality planning.

The result showed that maximum number(90%) of participants were aware of the role of hard and soft splints. Although several studies have reported the use of soft splint [9,10],these splints have shown to extend pain and nocturnal electromyography recording compared to hard splints[11]. In the current study 67.3% - 72.7% of the dentist implementing to prefer hard and soft splints depending on the condition to treat myofascial pain, TMJ disorders and bruxism.

About 47.3% of the current study dentist prefer hard splints for muscular hyperactivity. Similarly in the study conducted by Jeffrey P. Okeson, eight of the ten participants had significant decrease in muscle activity when compared to soft splints[11]. Occlusal splint with the equal intensity contacts in all of the teeth, with immediate and condylar guidance in all movement will relax the elevator and positioning muscles and contribute to the reduction of abnormal muscular hyperactivity.[12-15]In the study conducted by Stephen harkin, Jack L. Marteney et al concluded that, use of soft occlusal splint as a temporary treatment and diagnostic modality in patient suffering from reducible disk derangement of TMJ [16]. Thus, it was concluded that in patient with nocturnal muscle activity, soft splint is likely to be contra-indicated[12].

Decreased oxygen saturation, even with a 2%-4% drop irritates the brain, this is the most significant factors to promote bruxism, clenching or interrupted sleep. By increasing oxygen flow, sleep appliance reduces this reason for clenching .Sleep appliance are usually recommended to be worn 6-8 hours/day, while an ARA is recommended full time[17] (in some case even while eating)[18].79.3% of the current study dentist recommend sleep appliance mandatory 6-8 hours a day, this shows adequate knowledge of occlusal therapy among the participants. Nearly 37.3% of present study participating dentist reported to discontinue the splint therapy after the desired result is obtained and reported with minimum 6 months of therapy duration . This long-term duration of splint therapy indicates insufficient knowledge about the duration of splint therapy. This prolonged initial occlusal splint therapy is known to cause pathological and to some extent irreversible changes in masticatory system.[19]

In the present study, 86.7% of the participants reported to prefer additional therapy adjunct to occlusal therapy such as pharmacological and thermal therapy and only 13.3% of the dentist asserted that they prefer no additional therapy. C Candirli et al in their survey study[20], revealed that 51.7% of the dentist preferred additional therapy. The result of this study seems that even though there is few lack in knowledge, most of dentist prefer effective treatment modality and choose splint types depending on the severity of the condition and aware of possible outcomes.

CONCLUSION:

The present survey concluded that majority of the dentist are aware of the importance of occlusal splints but there revolves a minor ignorance and lack of knowledge among few practitioners. Thus, this study request to reinforce these in practice by giving additional education towards the outcome of improper treatment. We hope that the result of present study may serve as a guide for further studies.

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CONFLICT OF INTEREST: There are no conflict of interest.

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