IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 19, Issue 5 Ser.7 (May. 2020), PP 17-21
www.iosrjournals.org

Knowledge Practice and Attitude Towards Shortened Dental Arch Concept Among Prosthodontists – AQuestionnaire Survey

Dr. Supraja Volety[1], Dr. Krishna Kumar[2], Dr. Gautam Shetty[3], Dr. Shreya Bukkapatnam[4]

([1]Post Graduate, Department of Prosthodontics crown and bridge, Rajarajeswari dental college and hospital, India)
([2]Professor, Department of Prosthodontics crown and bridge, Rajarajeswari dental college and hospital, India)
([3]Professor and Head of the department, Department of Prosthodontics crown and bridge, Rajarajeswari dental college and hospital, India)
([4]Senior lecturer, Department of Prosthodontics crown and bridge, Rajarajeswari dental college and hospital, India)

Abstract:
Background:*The shortened dental arch (SDA) can be defined as the type of dentition with reduced or even absence of the molars and/or premolars. It offersan alternative treatment option that is less complicated,less time consuming and less expensive than fullreplacement, but with acceptable oral functions. Since only a few reports are available in the literature describing the attitudes among Prosthodontist towards the SDA concept. So the aim study conducted with aim to assess knowledge, practice and attitude towards shortened dental arch concept among Prosthodontists.*
Materials and methods: *An online questionnaire with 12 close-ended questions was developed using Google forms with first segment consisted of general information and second segment consisted of questions related to the knowledge and attitude of Prosthodontists about SDA concept and its use in their regular practice. This questionnaire was sent to all the Prosthodontists in Bangalore who were either private practitioners or academicians or both via URL link through Whatsapp. All the participants were given adequate time to respond. After the results were obtained data was subjected to statistical analysis using Chi-square test.*
Results: *About 46.4% of the participants were well aware, 62.5% of the participants were using this concept occasionally. 37.5% of the participants said that the masticatory efficiency was sufficient, 32.1% said that the occlusal stability was satisfactory, 53.6% said that it is esthetically acceptable, 67.9% said SDA does not affect TMD and majority (80.4%) of the Prosthodontists SDA has useful place in clinical practice.*
Conclusion: *Within the limitation of our study it can be concluded that Prosthodontists believed that shortened dental arch treatment option can be useful in clinical practice and is adequate to provide satisfactory masticatory efficiency, oral comfort and esthetics to the patients.*
Key words: *Shortened dental arch, Prosthodontist, Attitude, Knowledge, Practice*

Date of Submission: 02-05-2020 Date of Acceptance: 16-05-2020

I. Introduction

The shortened dental arch (SDA) can be defined as the type of dentition with reduced or even absence of the molars and/or premolars.[1]i.e, dentition with intact anterior teeth and a reduction in the occlusal pairs of posterior teeth.[2] This concept is characterized by a minimum of four occlusal units that provide functional satisfaction to older adults with sufficient adaptive capacity. This was first described by the Dutch Prosthodontist ArndKayser and coworkers at the Dental School of the University of Nijmegan, the Netherlands, in 1981.[3]

Earlier it was considered essential to replace all the missing teeth, as it was considered that failure to replace teeth would result in occlusal instability and Temporomandibular disorders.[4]Kayser emphasized that it was needless to restore all the teeth which are lost for successful and satisfactory functioning of oral function.[4]World Health Organization within its goals for oral health for the year 2020 also defines the functional dentition as a minimum of 21 healthy and functioning teeth.[5]

Treatment planning is usually influenced by multiple factors, including patient's demands and expectations, the cost of treatment and age.[5] The SDA concept offersan alternative treatment option that is less complicated,less time consuming and less expensive than fullreplacement, but with acceptable oral functions.[2]

Only a few reports are available in the literature describing the attitudes among dental clinicians toward the SDA concept.[2,3,5] Studies exclusively from specialist Prosthodontists on their attitude on SDA concept are

scarce. The aim of this study was to assessknowledge, practice and attitude towards shortened dental arch concept among Prosthodontists.

II. Materials And Methods

An online questionnaire was developed using Google forms with questions related to the knowledge and attitude of Prosthodontists about SDA concept and its use in their regular practice. This questionnaire was sent to all the Prosthodontists in Bangalore who were either private practitioners or academicians or both via URL link through Whatsapp. All the participants were given adequate time to respond.

The participants included were those who were willing for participation and those who were either a private practitioner or academician or both. Those who were not willing to participate were excluded from the study and also postgraduate students were not included in the study.

The questionnaire consisted of total 12 close-ended questions. All the questions were made mandatory for response. In the beginning of the questionnaire general information of the participants were obtained such as age, gender, designation, years of practice, average amount of patients treated per year. The next segment consisted of questions which includes awareness and knowledge about the concept and what is their opinion in applying the concept in their regular practice.

Statistical analysis

Statistical analysis was done using counts and percentages and the results were further analyzed statistically by the Chi‑ square test. The data were analyzed using the Statistical Package for the Social Sciences statistical software (IBM SPSS Statistics for Windows, Version 20.0. IBM Corp., Armonk, NY, USA).

III. Results

A total of 56 responded out of 100 Prosthodontists, among which 67.9% females and 32.1% males were participated in the study [Figure 1]. Among them private practitioners were more with 42.9% followed by 33.9% of individuals practicing both and only 23.2% were academicians [Figure 2]. These respondents had an experience of practice with wide range from 1 year to 34 years with average number of patients seen ranging from 50 to 4000 plus per year.

Figure 1: Gender distribution in the survey

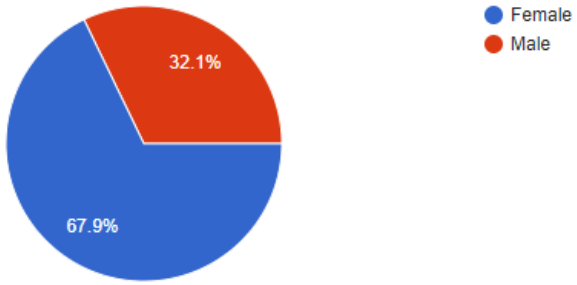
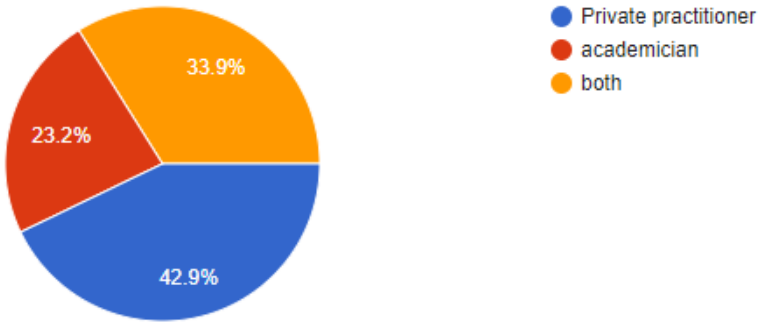


Figure 2: Designation distribution of participants in the survey



When a question was asked about their awareness about SDA concept 46.4% of the individuals were well aware, 51.8% were aware about the concept and only 1.8% of the individual were unaware of the concept. Results also showed that both private practitioners and academicians were either well aware or aware of the concept.

When asked how often dothey apply SDA concept in their practice it was observed that only 25% of the Prosthodontists were applying regularly whereas majority (62.5%) of the individuals were using this concept occasionally. When asked about when did they learn about this concept 83.9% of the Prosthodontists learned during their post graduation period and remaining 16% Prosthodontists learnt either by self-education or learnt during their under graduation or from their colleagues or from seminars and conferences.

When the questionin your opinion, what is your response for the statement, "All missing molar teeth should be replaced in all patients"?Was asked, 39.3% of the Prosthodontists disagreed to the statement and around 30.4% of the Prosthodontists gave neutral response. To know the patients response to proposal of SDA concept (64.3%) majority of the Prosthodontists responded saying patients gave initial objections but after explaining patient were obeying to the dentist.

After learning about their knowledge about the SDA concept next the Prosthodontists were asked few questions about certain factors which may get affected with use of SDA concept. When asked about their assessment regarding the masticatory efficiency after applying SDA concept most of the Prosthodontists said it was either sufficient (37.5%), satisfactory (30.4%) or acceptable (28.6%). Almost similar results were obtained when asked about the occlusal stability or oral function of patients with shortened dental arch but when asked about esthetics majority of the Prosthodontists said that it was acceptable (53.6%) enough.

When a question was asked whether SDA causes TMJ associated issues 67.9% of the individuals responded NO, 23.2% said may be, 10% of the individuals said YES. Further it was asked that whether individuals with SDA needs further treatment, the answer was no by majority (42.9%) of the individuals and few said may be (39.3%).

Lastly when the Prosthodontists were asked whether SDA concept will have a useful place in clinical practice 80.4% of the participants agreed saying yes SDA has a useful place in clinical practice. Table 1 gives the summary of responses to questions asked in survey.

Table 1: Summery of responses to survey questions.

Questions	**Response options**	**Years of experience**		**Total (%)**	**Chi square value**	**P value**
		< 5 yrs (%)	**> 5 yrs (%)**			
How would you rate your awareness about SDA concept?	Well aware	38.1	71.4	46.4	8.83	0.012*
	Aware	61.9	21.4	51.8		
	Unaware	0.0	7.1	1.8		
How often do you apply SDA concept in your practice?	Never	4.8	14.3	7.1	1.62	0.65
	Occasionally	64.3	57.1	62.5		
	Regularly	26.2	21.4	25		
	Very frequently	4.8	7.1	5.4		
When did you learn about SDA concept?	Under graduation	2.4	7.1	3.6	5.01	0.65
	Postgraduation	85.8	78.5	83.9		
	Self-education	7.2	14.2	8.9		
	Colleagues	4.8	0.0	3.6		
	Conferences / seminars	9.6	14.2	10.7		
In your opinion, what is your response for the statement, "All missing molar teeth should be replaced in all patients"?	Strongly agree	7.1	21.4	10.7	4.29	0.23
	Agree	16.7	28.6	19.6		
	Neutral	31	28.6	30.4		
	Disagree	45.2	21.4	39.3		
In general, how would you describe patients' reactions in response to your proposal of SDA as a treatment option?	Objections	0	14.3	3.6	6.96	0.073
	Initial objection/ compliance after explanation	69	50	64.3		
	No objections	14.3	21.4	17.9		
	Cannot say	16.7	14.3	16.1		
What is your	Not acceptable	2.4	14.3	5.4	4.51	0.34

assessment regarding the masticatory efficiency/ chewing function in an SDA?	Acceptable	28.6	28.6	28.6		
	Sufficient	40.5	21.4	37.5		
	Satisfactory	26.2	35.7	30.4		
	Don't know	2.4	0	1.8		
What is your assessment regarding the occlusal stability/ oral comfort in an SDA?	Not acceptable	0	14.3	3.6	8.74	0.068
	Acceptable	33.3	28.6	32.1		
	Sufficient	33.3	14.3	28.6		
	Satisfactory	28.6	42.9	32.1		
	Don't know	4.8	0	3.6		
What is your assessment regarding the esthetics in an SDA?	Not acceptable	4.8	21.4	8.9	4.08	0.25
	Acceptable	57.1	42.9	53.6		
	Sufficient	28.6	21.4	26.8		
	Satisfactory	9.5	14.3	12.5		
	Don't know	0	0	0		
Does SDA leads to TMJ associated issues ?	Yes	9.5	14.3	10.7	0.98	0.61
	No	71.4	57.1	67.9		
	May be	19	28.6	23.2		
Do you think individuals with SDA needs further treatment?	Yes	11.9	35.7	17.9	4.10	0.12
	No	45.2	35.7	42.9		
	May be	42.9	28.6	39.3		
In your opinion, does the SDA concept have a useful place in clinical practice?	Yes	81	78.6	80.4	1.67	0.43
	No	7.1	0	5.4		
	May be	11.9	21.4	14.3		

IV. Discussion

In the present study, we investigated the knowledge attitude and application of SDA concept among Prosthodontists in their practice. More than 50% of the Prosthodontists were aware of the SDA concept but only 5.4% of the Prosthodontists were applying this concept very frequently in their practice. Majority of the Prosthodontists were applying it occasionally (62.5%). This was in accordance with other studies were it says only less than 10% of cases were treated with SDA concept even though they were well experienced.[5, 6] Years of experience of the individuals did not had any association with awareness about concept in our study but a study conducted in Australia suggested that recent graduates were more awareof the SDA concept than those who graduated 20 or more years ago. This may be due to Australian dental schools incorporating the SDA concept into their curricula in the last two decades.[7]

Though earlier it was considered that it is essential to replace all the missing teeth, majority of the Prosthodontists participated in the study disagree to this statement (39.3%). Similar results were seen in a study where all the participants disagreed that 'all missing molar teeth should be replaced in all patients'.[7]

Various studies have shown that when the proposal of SDA concept as treatment option was given to patient, they gave initial objection but later complied for the treatment after explanation.[5, 6] This was in accordance with our study where it shows 64.3% of the Prosthodontists also said that patients show initial objection but after explanation they got compiled.

When the Prosthodontists were asked to assess the shortened dental arch regarding the masticatory function and oral comfort,it was 67.9% and60.7% respectively. Other studies also showed similar results where dentists or specialists have said that shortening the dental arch does not affect oral comfort and masticatory function.[2,5,6] when esthetics were considered in our study 53.6% of the participants said it was acceptable whereas other studies[3,5,6,7,8] have shown that esthetics was satisfactory in their opinion.

In our study Prosthodontists believe that SDA does not have any effect on TMD, which was in accordance with a study which also stated that specialists believed that SDA does not have any effect on TMD.[5] In a study by Witter *et al.,* stated that SDAs provide sufficient mandibular stability: the absence of molar support is not a risk factor for the development of TMD problems.[9]

Since in SDA the dental arch is shortened either till premolars or first molars, there was a mixed belief in the participants who said there was no necessary to treat patients who are with shortened dental arch and few said may be we need to consider further treatment for these individuals. This may be due to the belief that if remaining tooth are not adequate enough to bear the occlusal load we might have to consider further treatment.

Even though there are many pros and cons to this concept, majority (80%) of the participants believed that SDA concept still hold a useful place in clinical practice, which is similar to previous studies conducted in other countries, e.g. the UK 77%, [10]the Netherlands 98% [8] and Tanzania 89% [6] and Australia 79%.[7]Experience of the individual did not had any effect on considering SDA as useful treatment protocol.

It is desirable to extend this study to a larger sample of Prosthodontists and even the response rate was less (56%) in this study hence inferences cannot be drawn in this study. Surveys designed to solicit responses directly from patients regarding acceptability of the SDA are required since no patient responses were obtained to confirm the initial information reported in this study. Since SDA treatment is a conservative treatment option resulting in reduced treatment cost, improved oral hygiene, reduce treatment duration and difficulty it can be used as a viable treatment option in elderly.[5]

V. Conclusion

Within the limitation of our study it can be concluded that Prosthodontists believed that shortened dental arch treatment option can be useful in clinical practice and is adequate to provide satisfactory masticatory efficiency, oral comfort and esthetics to the patients.

References

[1]. Manola M, Hussain F, Millar BJ. Is the shortened dental arch still a satisfactory option?.Br Dent J. 2017;223:108-12.
[2]. Kasim SK, Razak IA, Yusof ZY. Knowledge, perceptions and clinical application of the shortened dental arch concept among Malaysian government dentists. Int Dent J. 2018;68:31-8.
[3]. Kumar PC, George S. An assessment of prosthodontists' attitudes to the shortened dental arch concept. J InterdiscipDent. 2012;2:104.
[4]. Alam M, Joshi S, Joshi P. Shortened dental arch: A simplified treatment approach. J Nepal Dent Assoc. 2014;14:1-4.
[5]. Vohra F, Al-Qahtani M, Momenah N, Al-Kheraif AA, Ab-Ghani SM. Knowledge and attitudes of dentists toward shortened dental arch therapy in Saudi Arabia. NigerJClinPract. 2016;19:380-5.
[6]. Witter DJ, Allen PF, Wilson NH, Käyser AF. Dentists' attitudes to the shortened dental arch concept. Journal of oral rehabilitation. 1997;24:143-7.
[7]. Abuzar MA, Humplik AJ, Shahim N. The shortened dental arch concept: awareness and opinion of dentists in Victoria, Australia. Aust Dent J. 2015;60:294-300.
[8]. Sarita PTN, Witter DJ, Kreulen CM, Creugers NHJ. The shortened dental arch concept – attitudes of dentists in Tanzania. Community Dent Oral Epidemiol 2003;31:111–115.
[9]. Witter DJ, van PalensteinHelderman WH, Creugers NH, Käyser AF. The shortened dental arch concept and its implications for oral health care. Community Dent Oral Epidemiol. 1999;27:249-58.
[10]. Allen PF, Witter DF, Wilson NH, Kayser AF. Shortened dental arch therapy: views of consultants in restorative dentistry in the United Kingdom. J Oral Rehabil 1996;23:481–485.
[11]. De Sa e Frias V, Toothaker R, Wright RF. Shortened dental arch: a review of current treatment concepts. J Prosthodont. 2004;13:104-10.
[12]. Alammari M. Dentists' Attitudes Regarding Shortened Dental Arch Concept in Senior Dental Patients. IJDSR. 2017;5:25-30.
[13]. Fueki K, Igarashi Y, Maeda Y, Baba K, Koyano K, Akagawa Y, Sasaki K, Kuboki T, Kasugai S, Garrett NR. Factors related to prosthetic restoration in patients with shortened dental arches: a multicentre study. J Oral Rehabil. 2011;38:525-32.

Dr. Supraja Volety, et. al. "Knowledge Practice and Attitude Towards Shortened Dental Arch Concept Among Prosthodontists – A Questionnaire Survey."*IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(5), 2020, pp. 17-21.