

## ASSESSMENT OF NEPALESE PROSTHODONTIST'S ATTITUDE TOWARDS MORPHOLOGICAL COMPLETENESS OF DENTAL ARCHES IN PARTIALLY DENTATE OLDER PATIENTS

Sabina Poudel<sup>1\*</sup>, Prabhat Shrestha<sup>1</sup>, Lochana Acharya<sup>1</sup>, Sijan Poudyal<sup>2</sup>

<sup>1</sup>Department of Prosthodontics, KIST Medical College and Hospital, Lalitpur, Nepal

<sup>2</sup>Department of Community Dentistry, KIST Medical College and hospital, Lalitpur Nepal

Received: 1 Feb, 2020

Accepted: 11 Mar, 2020

Published: 13 Mar, 2020

**Key words:** Molars and premolars; Older patients; Prosthodontists opinion; SDA concept.

\*Correspondence to: Sabina Poudel, Department of Prosthodontics, KIST Medical College and Hospital, Imadole, Kathmandu, Nepal.  
Email: [sabinapoudel@hotmail.com](mailto:sabinapoudel@hotmail.com)

DOI: <https://doi.org/10.3126/jcmc.v10i1.28077>

### Citation

Poudel S, Shrestha P, Acharya L, Poudyal S. Assessment of Nepalese prosthodontist's attitude towards morphological completeness of dental arches in partially dentate older patients. Journal of Chitwan Medical College. 2020;10(31):74-77.



Peer Reviewed

### ABSTRACT

**Background:** Complete dentition is not always appropriate for old aged medically compromised and financially weak individuals. It is the dentist to decide what minimum number of teeth should be restored to have the proper oral function. The aim was to find out the opinion of prosthodontists of Nepal regarding the suitability of shortened dental arch as treatment modality and how frequently is this treatment choice for an old aged Nepalese patient.

**Methods:** A pretested close ended questionnaire was used in this study. After taking ethical clearance from Nepal Health Research Council, online questionnaire was sent to the participants along with the consent. Analysis was done using SPSS (version 21) statistical software package. Descriptive statistics was used. Percentage and frequencies were calculated.

**Results:** Among respondents, 96.2% (n=51) had heard about shortened dental arch therapy but 3.8% (n=2) had never heard about it. Forty-two (79.2%) do support shortened dental arch. Eleven (20.8%) do not favor shortened dental arch. Their main reason for replacing molars was to improve masticatory function. Instead of shortened dental arch, n=5 (45.5%) prefer cast partial denture and 6 (54.5%) advice implant supported fixed prosthesis. Among Prosthodontists who recommended shortened dental arch therapy, eight (19.1%) always advised patients not to replace molars. Twenty-four (57.1%) prosthodontists who support shortened dental arch therapy mentioned chewing function in shortened dental arch patients as satisfactory.

**Conclusions:** Majority of Prosthodontists agree that shortened dental arch is a suitable treatment option for older people in developing countries like Nepal. But the treatment is not employed in clinical practice as required.

### INTRODUCTION

Most of the practitioners still hold the thinking that 28 tooth syndrome is necessary to prevent teeth migration and instability.<sup>1</sup> However, WHO in 1922 purposed that 'retention of a healthy, natural, functioning dentition comprising not less than 20 teeth and not requiring a prosthesis' as a goal of oral health.

Similarly, Kayeser and Ritter introduced SDAT (shortened dental arch therapy) as problem solving approach for missing posterior teeth.<sup>2</sup> In SDAT therapy a molar is equivalent to two occlusal units and a premolar is equivalent to a single occlusal unit.<sup>3</sup> They concluded that four occlusal units are enough for functional demands and occlusal stability. Minimum migration of tooth which occurred after extraction of posterior teeth was also negotiated by stable occlusion after a period of time.<sup>4</sup>

Moreover, TMJ loads during maximum voluntary clenching was found less in SDA than in complete dentitions.<sup>5</sup> Beside this, SDA was also not a risk factor for craniomandibular dysfunction.<sup>6</sup> However, periodontal response, and amount of food consumption were also affected but change was acceptable to the pa-

tients.<sup>7</sup>

This SDA concept is relevant for the developing countries like Nepal, where older individual wants a treatment with adequate function at less cost.<sup>8</sup> But there is always a controversy between the treatment need of the patient and professionally diagnosed need by the clinicians.<sup>9,10</sup> There is lack of information regarding the Nepalese Prosthodontists attitude towards the SDA concept. So the objective was to find out the Prosthodontists level of acceptance about SDAT (shortened dental arch therapy) and frequency of SDAT implementing in their clinical practice.

### METHODS

This was a descriptive, cross-sectional study. Pre-tested close ended questionnaire used in previous studies in Sudan,<sup>11</sup> UK,<sup>12</sup> and India<sup>13</sup> were modified and used for data collection. These questionnaires were again modified by sending to three seniors prosthodontists to assess its validity for its use as study instrument. The final set of questionnaire, along with consent form was formulated with the help of Google forms and after ethical approval from the NHRC on November 12, 2019 (proposal ID -7892019) circulated among 80 Prosthodontists of Nepal

through the electronic media. Inclusion criteria of the study were prosthodontists who were NMC registered and worked for more than 1 year. Exclusion criteria were the prosthodontists not doing the clinical work. Questions consisted of two sections. First section included sociodemographic characteristics. Second part included participant's acceptance, awareness and frequency of implementation of SDA in their clinical practice.

Data collection was done from November 13, 2019 to January 15, 2020. Prosthodontists were informed that the study was anonymous and data would be analyzed collectively. Reminder calls were given for three times. Analysis was done using SPSS (version 21) statistical software package. Descriptive statistics was used. Percentage and frequencies were calculated.

## RESULTS

Out of 80 Prosthodontists, 53(66.25%) responded to the questionnaire. Others were repeatedly reminded for three times but no response was received. Among respondents, 79.2% Prosthodontists were between the age ranges of 30-40 years. The percentage of female (41.5%) was lesser than that of male (58.5%).

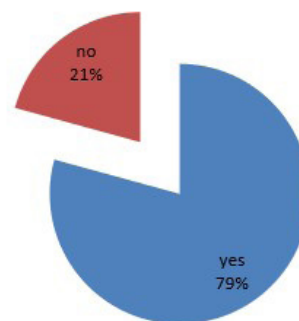
Majority of respondents were involved in academic institute. Nineteen (35.8%) had teaching experience of 1-5 years and two(3.8%) had an experience between 16-18 years. All the respondents had the clinical experience. Three (3.8%) of the participants had experience of more than 16 years whereas maximum Prosthodontists (n=30; 56.6%) had an experience of 1-5 years (Table 1).

Patients examined annually was between 100-1000 by 52.8%(n=28) and highest number of patients seen annually that is between 4001-5000 was only by 1.9%(n=1) participants.

**Table 1: Prosthodontists with their experience**

Years of experience	Teaching experience n (%)	Clinical experience n (%)
none	15(28.3)	00
1-5	19(35.8)	30(56.6)
6-10	14(26.4)	15(28.3)
11-15	3(5.7)	5 (9.4)
>16	2(3.8)	3(5.7)
total	53(100.0)	53(100.0)

Among total respondents 79.2 % ( n=42) agree with SDA as treatment whereas 20.8 % ( n=11) do not agree and replaces the missing posteriors(Figure1).



**Figure 1: Participants who support SDA as treatment option.**

**Table 2: Prosthodontists according to their designation and the percentage of patients on whom they have applied SDA concept**

Designation	Prosthodontists n(%)
Clinical Practitioners	11(20.8)
Lecturer	22(41.5)
Assistant professor	11(20.8)
Associate professor	6(11.3)
Professor	3(5.7)
Total	53(100)
Patient's applied	
None	5(9.4)
11-25%	8(15.1)
<10%	26(49.1)
26-50%	3(5.7)
Total	42(79.2)

When asked about the concept regarding SDAT, 96.2% (n=51) had heard about SDAT but 3.8 % (n=2) had never heard about it. Though 98.1 % (n=52) agree with problem oriented approach only 77.4% (n=41) sometimes read article related to SDAT where as 17% (n=9) had not read till date. However, among the prosthodontists who were involved in teaching institute, 11(20.8%) do make dentures as a quota for SDA patients. Two (3.8%) Prosthodontists recommended SDAT concept for young patients and rest said they apply in middle age (11.9%) and more than 50 years of age(83.3%).

Reason of most of the Prosthodontists for not supporting SDAT was to improve the masticatory function.(n=6,54.5%). Their main reason for replacing molars was also to improve masticatory function.(n=8,72.7%). Instead of SDAT ,n=5(45.5%) prefer cast partial denture and 6(54.5%) advice implant supported fixed prosthesis (Table3).

**Table 3: Views of Prosthodontists who do not support SDAT.**

Reasons	Prosthodontists n(%)
<b>Not opting SDAT as treatment option</b>	
1)to restore posterior support	2(18.2)
2)to prevent anterior wear	1(9.1)
3)to improve masticatory function	6 (54.5)
4)to maintain health of TMJ	1(9.1)
5)for patient's desire	1(9.1)
total	11(100.0)
<b>Replacing posterior edentulous space with molars</b>	
1)to restore posterior support	1(9.1)
2)to improve masticatory function	8(72.7)
3)to maintain health of TMJ	2(18.2)
total	11 (100)
<b>Treatment option for posterior re- placement</b>	
1)Cast partial denture	5(45.5)
2)Implant supported fixed prosthesis	6(54.5)

Among Prosthodontists who recommended SDAT, eight(19.1%) always advised patients not to replace molars where as 34(64.2) sometimes advised not to replace.

Twenty four (57.1%) prosthodontists who support SDAT mentioned chewing function in SDA patients as satisfactory, 10 (23.8%) said unsatisfactory but acceptable while 8(19%) have no idea about it. Likewise, regarding clinical situation ideal for SDAT, Majority (n=26, 61.9%) gave the option of limited possibilities of restorative care. However 3(7.1%) said SDAT can be a treatment option for young age also(Table 4).

**Table 4: Assessment of chewing efficiency in SDA patients and clinical situation**

Chewing efficiency	Prosthodontists n (%)
<b>Chewing function in SDA patients</b>	
1) Unsatisfactory /acceptable	10 (23.8)
2) satisfactory	24(57.1)
3)Do not know	8(19.0)
<b>Clinical situations applicable for SDAT</b>	
1) Caries /periodontal disease confined mainly to molar region	5(11.9)
2) Good periodontal prognosis of the anterior and premolar	8(19.0)
3) limited possibilities of restorative care	26(61.9)
4) No contraindications such as a young age.	3(7.1)

**DISCUSSION**

SDA is a more conservative treatment. Though it is widely accepted but practiced less. About 3.8% of respondents in this study were not aware of the SDA. This can be considered negligible and this finding is similar to the findings of Sudanese prosthodontist<sup>11</sup> but contrast to the findings of Indian dentist in which only 40.6% were aware.<sup>14</sup> The reason behind this difference in findings may be specialists are more active in updating their knowledge through continuing dental education programme, workshops and seminars Findings in this study showed that teaching and clinical experience was not associated with level of knowledge of SDA. This was different from the study done on Sudan dentist<sup>11</sup> and Australian dentist<sup>15</sup> in which recent graduates were more aware of the concept than those who graduated 20 years before. This may be due to rapid growth in information technology and networking and seminars, workshops etc.

Among Nepalese Prosthodontists, those who were aware majority support the SDA treatment which was similar to studies conducted in UK,<sup>12</sup>Netherlands,<sup>16</sup> and Tanzania.<sup>17</sup>This study consisted of cross-sectional sample of Prosthodontists while previous studies consisted of specialists (including other subjects) and dentist at hospital and universities. However, Percentage of patients on whom concept was applied is less.9.4% have not applied SDA concept yet.15.1% on <10% and 5.7% on 25-50% which is similar to the findings of the study done on Indian prosthodontists.<sup>13</sup>

Reasons for SDA treatment to be applied in fewer patients may be Nepalese Prosthodontists are more familiar with traditional approach of replacing missing molars. Or it might be because the concept was not taught as part of training during their graduate or postgraduate period and also due to lack of the contemporary literature.

Regarding the opinions of Nepalese prosthodontists who disagree with SDA treatment, majority gave the reason to improve masticatory function, to prevent anterior wear and for posterior support. This opinion was similar to that of Australian dentist.<sup>13</sup>Majority of them replace posterior molars either with cast partial denture or implant supported fixed prosthesis. Older adults with reduced muscular tonicity and inability to perform good oral hygiene may have disadvantage with complex, expensive and time-consuming treatment like cast partial and implant. Due to difference in resiliency of mucosa and resiliency of periodontal ligament of abutment tooth, and also due to problem relating to support and stability, treatment with distal extension RPD is problematic.<sup>18</sup>Regarding implant it is expensive and invasive procedure for elderly people.

In relation to the opinion of respondents who supported SDAT, most of them felt that chewing function was satisfactory.Similar result was reported in the study done by Sarita et.al<sup>17</sup> and Witter et.al.<sup>16</sup>

They also presented the situation in which they opt SDA. Majority of them said in patients, where there are limited possi-

bilities of restorative care, caries /periodontal disease confined mainly to molar region and good periodontal prognosis of the anterior and premolar. This result is supported by the study done by Pradeep et.al.<sup>13</sup>

Till date most of the studies regarding SDAT was done in other countries. Majority of them are done on the general practitioners and only few are on Prosthodontists. So, less literature was available for the comparison of this study. This was the major limitation. Since the questionnaire was sent online it might not be reliable as there is the chance of participants becoming biased.

## CONCLUSION

Since SDA offers a functional approach at lesser cost, it is relevant to developing countries like Nepal. Although all prosthodontists are aware of the concept it is not applied during clinical practice frequently. Also lack of detailed knowledge regarding SDA was assessed among most of the Prosthodontists. So, to promote, SDA should be included during the training programmes and postgraduate training based on best available current evidence should be implemented in the curriculum.

**CONFLICT OF INTEREST:** None

**FINANCIAL DISCLOSURE:** None

## REFERENCES:

1. Käyser AF, Battistuzzi PG, Snoek PA, Plasmans PJ, Spanauf AJ. The implementation of a problem-oriented treatment plan. *Aust Dent J.*1988;33(1):18-22. [\[DOI\]](#)
2. Käyser A. Shortened dental arches and oral function. *Journal of Oral Rehabil.*1981;8(5):457-62. [\[DOI\]](#)
3. Kanno T, Carlsson GE. A review of the SDA concept focusing on the work by the Kayser/ Nijmegen group. *J Oral Rehab.*2006;33(11):850-62. [\[DOI\]](#)
4. Sarita PT, Kreulen CM, Witter DJ, Van't Hof M, Creugers NH. A study on occlusal stability in shortened dental arches. *Int J Prosthodont* 2003;16(4):375-80. [\[PMID\]](#)
5. Hattori Y, Satoh C, Seki S, Watanabe Y, Ogino Y, Watanabe M. Occlusal and TMJ loads in subjects with experimentally shortened dental arches. *J Dent Res.*2003;82(7):532-6. [\[DOI\]](#)
6. Witter DJ, De Haan AF, Käyser AF, Van Rossum GM. A 6-year follow-up study of oral function in shortened dental arches. Part II: Craniomandibular dysfunction and oral comfort. *J Oral Rehab.*1994;21(4):353-66. [\[DOI\]](#)
7. Aukes JN, Käyser AF, Felling AJ. The subjective experience of mastication in subjects with SDAs. *J Oral Rehabil* 1988;15(4):321-4. [\[DOI\]](#)
8. Alam M, Joshi S, Joshi P. Shortened dental arch: A simplified treatment approach. *J Nepal Dent Assoc.* 2014;14(1):1-4. [\[LINK\]](#)
9. Frank RP, Milgrom P, Leroux BG, Hawkins NR. Treatment outcome with mandibular removable partial denture: A population based study of patient satisfaction. *J Prosthet Dent* 1998;80(1):36-45. [\[DOI\]](#)
10. Korduner EK, Söderfeldt B, Kronström M, Nilner K. Attitudes toward the SDA concept among Swedish general dental practitioners. *Int J Prosthodont* 2006;19(2):171-6. [\[PMID\]](#)
11. Abdalla SE, Khalifa N. Shortened dental arches as a treatment: attitudes of Sudanese specialists in prosthodontics. *EC Dental Science.* 2015;2:276-83. [\[LINK\]](#)
12. 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(7):481-5. [\[DOI\]](#)
13. Kumar PC, George S. An assessment of prosthodontists' attitudes to the shortened dental arch concept. *Journal of Interdisciplinary Dentistry.* 2012 May 1;2(2):104-107.
14. Kachhara S, Anand BM, Dhanraj M, Jain AR. Knowledge, awareness, and practice survey on the concept of shortened dental arches. *Drug Invention Today.* 2018 May 1;10(5):711-3. [\[LINK\]](#)
15. Abuzar MA, Humplik AJ, Shahim N. The shortened dental arch concept: awareness and opinion of dentists in Victoria, Australia. *Australian Dental J.* 2015;60(3):294-300. [\[DOI\]](#)
16. Witter DJ, Allen PF, Wilson NH, Kayser AF. Dentists' attitudes to the shortened dental arch concept. *J Oral Rehabil.*1997;24(2):143-7. [\[DOI\]](#)
17. Sarita PT, Witter DJ, Kreulen CM, Creugers NH. The shortened dental arch concept – attitudes of dentists in Tanzania. *Community Dent Oral Epidemiol.* 2003;31(2):111-5. [\[DOI\]](#)
18. Nairn RI. The problem of free-end denture bases. *J Prosthet Dent.*1966;16:522-32. [\[DOI\]](#)