

Evaluation of The Current Scenario of Functional Jaw Orthopaedic Treatment In General Dental Practice of Maharashtra – A Survey.

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Abstract

Introduction: The Functional jaw orthopedics appliances effectively correct the skeletal problems. This treatment modality can eliminate the need or minimize the extent of surgical correction that may be required after completion of growth. But still majority of patients are use to visit dentist and/or orthodontist after cessations of growth. At certain instances patients are improperly diagnosed by dental surgeons and so that they missed the crucial treatment time as skeletal corrections are possible only in the growing phase. This survey is to find out the current scenario of functional jaw orthopaedic treatment in general dental practice of Maharashtra. So, that the population will be benefited from the

advantages of early treatment with functional jaw orthopedics

Material and method: cross sectional questionnaire-based study was conducted amongst the specialist orthodontist in Maharashtra through an e-survey using Google forms. The sample size was 100 and Google forms were sent to 145 members through E-mails. Questionnaire was distributed and responses were evaluated.

Result: The online recorded information was converted into codes and analyzed. Analysis was done using descriptive statistics and expressed in the form of percentages.

Conclusions: 1. According to specialist orthodontist, initiating early treatment with functional jaw

orthopedics appliances eliminate or decrease the extent of surgical correction and reduce the treatment time of fixed mechanotherapy.

2. According to specialist orthodontist, the General dental practitioners are not aware regarding importance of relationship between growth status and different orthodontic mechanotherapy. And they think that there is a need of increasing awareness about functional jaw orthopedics amongst general dental practitioners in Maharashtra.

3. According to specialist orthodontist awareness, appliance fabrication and Patient compliance are the difficult aspect in functional jaw treatment sequentially in Maharashtra.

Keywords: functional jaw orthopaedic, survey, orthodontist and general dental practitioners.

Introduction

Skeletal class II and class III malocclusion can be most effectively treated by non-extraction means if diagnosed at an early age with correct patient –parent motivation. As Witzig has rightly said, “*There are no bad patients or appliance that fail, it’s we doctor who fail to motivate the patient for a correct patient-appliance combination*”

Functional appliances improve the sagittal intermaxillary relationship mainly by their effect on the mandible and show a significant dental effect by overjet reduction. The skeletal changes are brought about by stimulation of condylar growth^[1-5] as well as a contribution by a certain amount of fossa advancement.^[6-9] They also seem to exert a growth-restraining effect on the maxilla.^[7,10,11] Besides the small sagittal skeletal base improvement influencing overjet, the dentoalveolar effect on overjet is brought about by palatal tipping of maxillary and labial tipping of mandibular incisors, respectively.^{[7, 12].} Extra Oral

Appliance like Headgear appliances also improve the sagittal intermaxillary relationship, demonstrating a large effect on the maxillary skeleton. They appear to achieve this growth modification by means of a sutural response.^[13-15]

Functional jaw orthopedics appliances treat the etiology behind the development of malocclusion and not the consequences produce by it as in camouflage treatment. This treatment modality can eliminate the need and/or minimize the extent of surgical correction that may be required after completion of growth.

Though, the Functional jaw orthopedics appliances effectively correct the skeletal problems, but still majority of patients are not aware about the miracles of these appliances. And they use to visit dentist and/or orthodontist after cessations of growth. At certain instances patients are improperly diagnosed by dental surgeons and so that they missed the crucial treatment time as skeletal corrections are possible only in the growing phase.

This survey is to find out the current scenario of functional jaw orthopaedic treatment in general dental practice of Maharashtra. So, that the population will be benefited from the advantages of early treatment with functional jaw orthopaedic appliances

Rationale

In private dental practice, regarding patients requiring functional jaw orthopedics treatment scenarios commonly seen in Maharashtra are -

1. In Maharashtra population, generally they believe that braces (fixed orthodontic appliance) are only orthodontic appliance. And the orthodontic treatment can begin only after complete eruption of permanent teeth or after maturation.
2. General Dentists are not able to diagnose and treat functional jaw orthopedic cases. And they suggest fixed

orthodontic treatment (camouflage) after complete eruption of permanent teeth or after maturation.

In the above situations, the orthodontic patients suffer in terms of quality care and appropriate treatment. As time is a very important factor in delivering quality treatment for orthodontic problems, the above situations need to be changed, for which - Evaluation of the current scenario of functional jaw orthopaedic treatment in general dental practice of Maharashtra is necessary.

Aim: Evaluation of the current scenario of functional jaw orthopaedic treatment in general dental practice of Maharashtra

Objectives: Following were the objectives perceived during this survey:

1. To explore the opinion of orthodontist regarding functional jaw orthopaedic treatment of Maharashtra
2. To evaluate and explore the knowledge, attitude and awareness about functional jaw orthopedics among the dental practitioners of Maharashtra according to perspectives of specialist orthodontists.

Materials and Methods

Study setting: A cross sectional questionnaire-based study was conducted amongst the orthodontist specialist of Maharashtra through an e-survey using Google forms between January to September 2019.

Study population and sampling technique: A list of orthodontist specialist of Maharashtra was obtained and a list of email address was collected through convenience sampling. Sample size was calculated using EpiInfo software. The final sample size was 100 and e-mails were sent to 145 members through Google form.

Study tools and Data collection: The 10-item closed questionnaire in structured format was framed for the orthodontists. The questionnaire was distributed in the orthodontist specialist of Maharashtra. Lawshe's method was used for content validity using judgments from a

panel of 10 subject matter experts (SMEs).^[16] The reliability was also established by test – retest amongst 20 volunteers of similar population. The kappa value was 0.9 which indicated high reliability. This was followed by pilot testing amongst 10 volunteers who were asked to answer the questionnaire and provide feedback on content, clarity and brevity of the questionnaire.

Details regarding the electronic mail were collected which was followed by questions on awareness and knowledge. All the participants used nominal scale (YES/NO scale) for the response. Check boxes were provided and participants had to click on any one option for each question. Care was taken that one person could answer the questionnaire only once and all questions were mandatory. Efforts were made to get completed forms by sending three reminders via emails. The responses were directly recorded through Google forms. Since this was an e-survey, the informed consent was included in the Google form.

Statistical analysis: The online recorded information was converted into codes and analyzed. Analysis was done using descriptive statistics and expressed in the form of percentages.

Result

After collection, the data has to be processed and analyzed in accordance with the outline laid down for the purpose at the time of developing the framework. Analysis of survey data using Likart scale shows that respondents were active to participate and all of them answered maximum questions. Survey details are in Table 1 and Graphs 1 to 10 provide responses of orthodontists in detail for individual question.

Discussion

To the date, there has been a lack of qualitative research on General Dental Practitioners of Maharashtra regarding the use of functional jaw orthopedics appliances. This

study is unique in its attention to the perception of knowledge, attitude and awareness about the principles of functional jaw orthopedics amongst general dental practitioners of Maharashtra.

This framework of survey provides clear connection between responses of orthodontist to online Google form. The focus of this article is to find out the current scenario of functional jaw orthopaedic treatment in general dental practice of Maharashtra. So that the population will be benefited from the advantages of early treatment with functional jaw orthopaedic appliances.

The framework with 10 questionnaires and outcomes results is as following-

Outcome 1: Does patient of age group between 7-10 years visit routinely for orthodontic check-up in your practice ?

Only 62 % orthodontist specialist gave positive response but still 38 % orthodontist specialist gave negative response that means awareness in society is necessary. [Table 1 and Graph 1]

Outcome 2: Do you practice functional jaw orthopaedic routinely?

76 % orthodontist specialist gave positive response. [Table 1 and Graph 2]

Outcome 3: Do you get referral of functional jaw orthopaedic patients from general dental practitioners routinely?

Only 37 % orthodontist specialist gave positive response. Though, the orthodontist is specialized person for functional jaw orthopaedic treatment but still very less referral for particular treatment. [Table 1 and Graph 3]

Outcome 4: Have you experienced that patients of functional jaw orthopaedic were initially misguided by general dental practitioner?

84 % orthodontist specialist gave positive response that means there might be possibility of less theoretical and/or clinical knowledge of functional jaw orthopaedic to the

general dental practitioner of Maharashtra. [Table 1 and Graph 4]

Outcome 5: Do you think that general dental practitioner is not aware regarding importance of relationship between growth status and different treatment mechanotherapy?

90 % specialist orthodontist gave positive response that means there might be possibility of gap in theoretical understanding and clinical implication of growth in orthodontics and dentofacial orthopedics to the general dental practitioner of Maharashtra. [Table 1 and Graph 5]

Outcome 6: Do you think that there is a need to increase awareness about functional jaw orthopedics in general dental practitioner?

99 % specialist orthodontist gave positive response that means there is a strongly need to increase awareness^[17-20] about functional jaw orthopedics in general dental practitioner of Maharashtra. [Table 1 and Graph 6]

Outcome 7: Have you ever experienced that if a particular patient has reported earlier then you would have given better treatment results?

96 % specialist orthodontist gave positive response that means there is lack of awareness regarding functional jaw orthopedics in Maharashtra population. [Table 1 and Graph 7]

Outcome 8: Do you think that beginning the treatment with functional jaw orthopedics appliances at early age will reduce the treatment time of fixed mechanotherapy?

86 % specialist orthodontist gave positive response that means beginning the treatment with functional jaw orthopedics appliances at early age will reduce the treatment time of fixed mechanotherapy [Table 1 and Graph 8]

Outcome 9: According to you, initiating early treatment with functional jaw orthopedics appliances eliminate or decrease the extent of surgical correction?

94 % specialist orthodontist gave positive response that means initiating early treatment with functional jaw orthopedics appliances eliminate or decrease the extent of surgical correction [Table 1 and Graph 9]

Outcome 10: According to you which one of the following is the most difficult aspect in functional jaw treatment?

According to specialist orthodontist awareness, appliance fabrication, patient compliance and longer treatment duration are the difficult aspect in functional jaw treatment sequentially. [Table 1 and Graph 10]

Summery & Conclusion

- According to specialist orthodontist, initiating early treatment with functional jaw orthopedics appliances eliminate or decrease the extent of surgical correction and reduce the treatment time of fixed mechanotherapy
- According to specialist orthodontist, the General dental practitioners are not aware regarding importance of relationship between growth status and different orthodontic mechanotherapy. And they think that there is a need of increasing awareness about functional jaw orthopedics amongst general dental practitioners in Maharashtra.
- According to specialist orthodontist awareness, appliance fabrication, Patient compliance, and longer treatment duration are the difficult aspect in functional jaw treatment sequentially

References

1. Charlier JP, Petrovic A, Herrmann-Stutzmann J. Effects of mandibular hyperpropulsion on the prechondroblastic zone of young rat condyle. *Am J Orthod.* 1969; 55:71–74.
2. McNamara JA, Carlson DS. Quantitative analysis of temporomandibular joint adaptations to protrusive function. *Am J Orthod.* 1979; 76:593–611.
3. Williams S, Melsen B. Condylar development and mandibular rotation and displacement during activator treatment:an implant study. *Am J Orthod.* 1982; 81:322–326.
4. Woodside DG, Altuna G, Harvold E, Herbert M, Metaxas A. Primate experiments in malocclusion and bone induction. *Am J Orthod.* 1983; 83:460–468.
5. Rabie ABM, She TT, Hagg U. Functional appliance therapy accelerates and enhances condylar growth. *Am J Orthod Dentofacial Orthop.* 2003; 123:40–48.
6. Birkebaek L, Melsen B, Terp S. A laminagraphic study of the alterations in the temporomandibular joint following activator treatment. *Eur J Orthod.* 1984; 6:267–276.
7. Vargervik K, Harvold EP. Response to activator treatment in Class II malocclusions. *Am J Orthod.* 1985; 88:242–251.
8. Woodside DG, Metaxas A, Altuna G. The influence of functional appliance therapy on glenoid fossa remodeling. *Am J Orthod Dentofacial Orthop.* 1987; 92:181–198.
9. Voudouris JC, Woodside DG, Altuna G, Angelopoulos G, Bourque PJ, Lacouture CY, Kuflinec MM. Condyle-fossa modifications and muscle interactions during Herbst treatment, part 2. Results and conclusions. *Am J Orthod Dentofacial Orthop.* 2003; 124:13–29.
10. Harvold EP, Vargervik K. Morphogenetic response to activator treatment. *Am J Orthod.* 1971; 60:478–490
11. Collett AR. Current concepts on functional appliances and mandibular growth stimulation. *Aust Dent J.* 2000; 45:173–178.
12. Bjork A. The principle of the Andresen method of orthodontic treatment: a discussion based on cephalometric x-ray analysis of treated cases. *Am J Orthod.* 1951; 37:437–458.

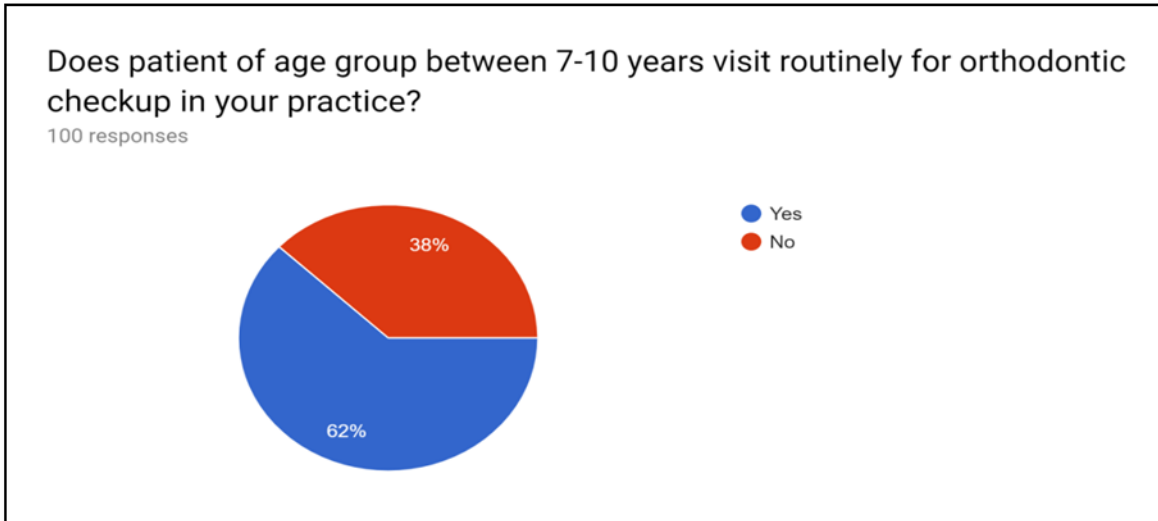
13. Triftshauer R, Walters RD. Cervical retraction of the maxillae in the *Macaca mulatta* monkey using heavy orthopedic force. *Angle Orthod.* 1976; 46:37–46.
14. Brandt HC, Shapiro PA, Kokich VG. Experimental and postexperimental effects of posteriorly directed extraoral traction in adult *Macaca fascicularis*. *Am J Orthod.* 1979; 75:301–317.
15. Jackson GW, Kokich VG, Shapiro PA. Experimental and postexperimental response to anteriorly directed extraoral force in young *Macaca nemestrina*. *Am J Orthod.* 1979;75: 318–333.
16. Ayre C, Scally AJ. Critical values for Lawshe’s content validity ratio: revisiting the original methods of calculation. *Measurement and Evaluation in Counselling and Development.* 2014 1;47(1):79-86.
17. Fleming P, Dowling P. A survey of undergraduate orthodontic training and orthodontic practices by general dental practitioners. *J Ir Dent Assoc* 2004: 51: 68–72.
18. S. Niveda, Dr. Saravana Dinesh, A survey of Knowledge, attitude and awareness of principles and practice in Orthodontics among general Dentists and Non orthodontic Specialist; *JDMS* 2014, vol 13, 44-46
19. K. Jones, H. Popat, i.G. Johnson; Dental Students experiences of treating orthodontic emergencies- a qualitative assessment of student reflections; *European Journal of Dental Education* 20(2016), 156-160.
20. Adamidis JP, Eaton KA, McDonald JP, Seeholzer H, Sieminska-Piekarczyk B. TI - A survey of undergraduate orthodontic education in 23 European countries. *J Orthod* 2000: 7: 84–91.

Legends Figure and Table

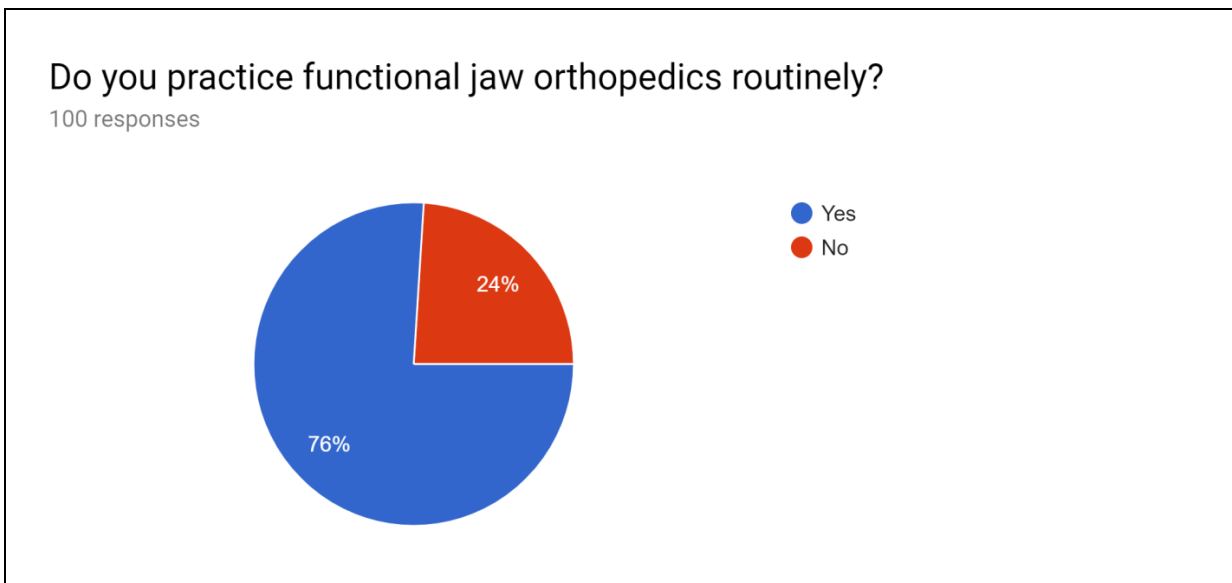
Table 1- Response by specialist orthodontist

Response No.	1	2	3	4	5	6	7	8	9
Yes %	62	76	63	84	90	99	96	86	94
No%	38	24	37	16	10	1	4	14	6

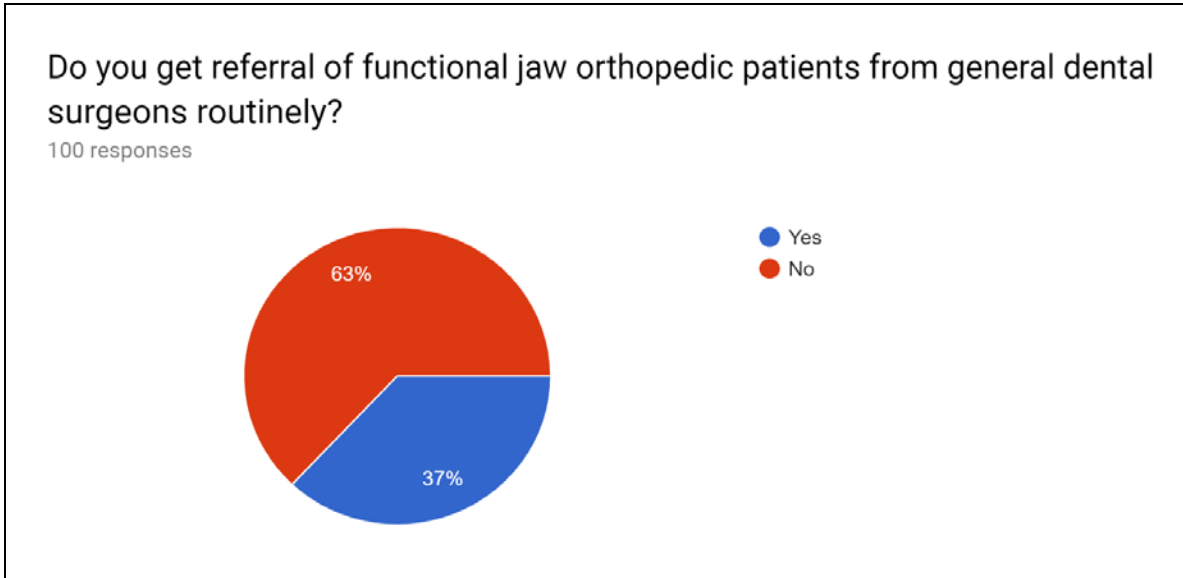
Graph - 1



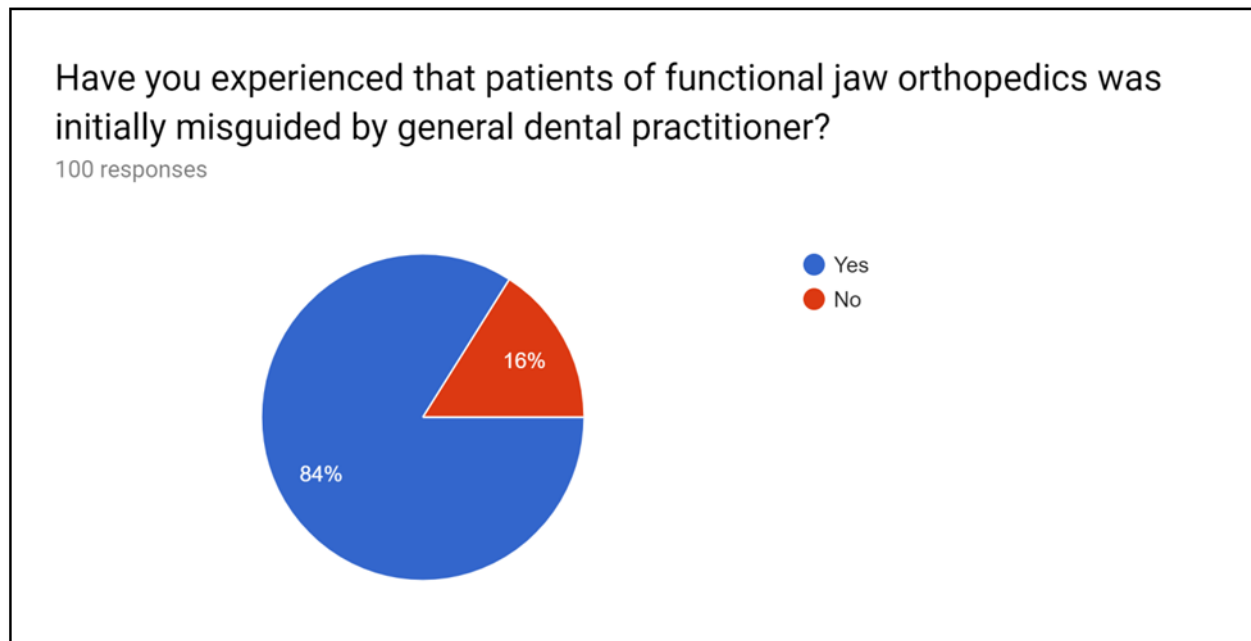
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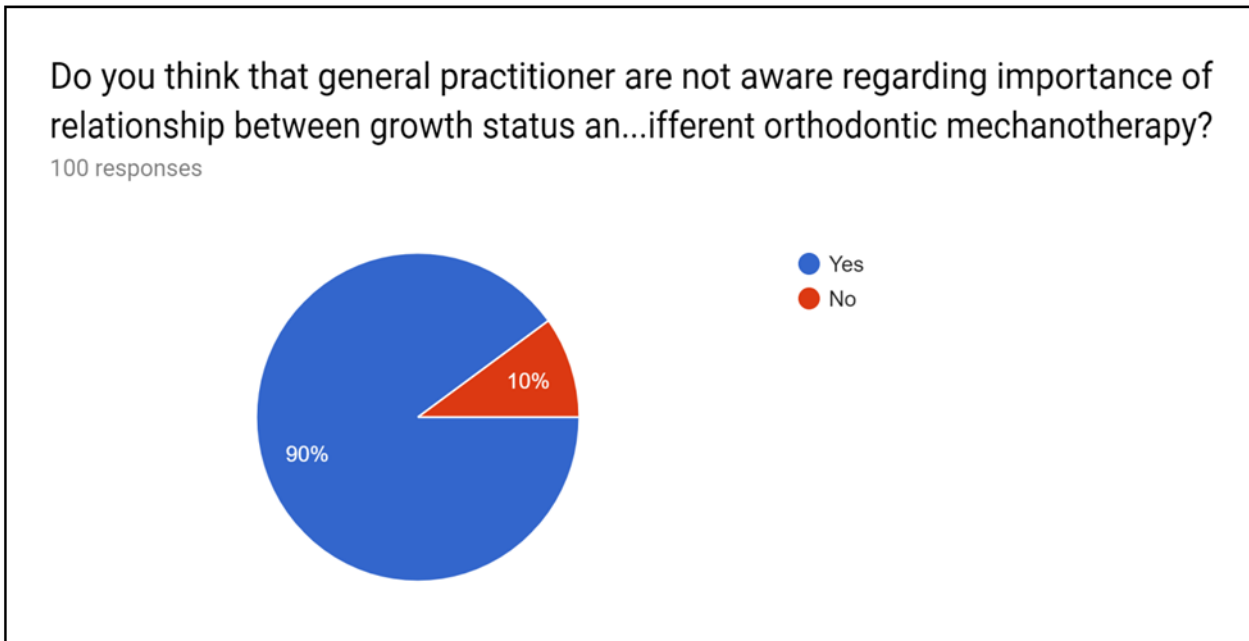
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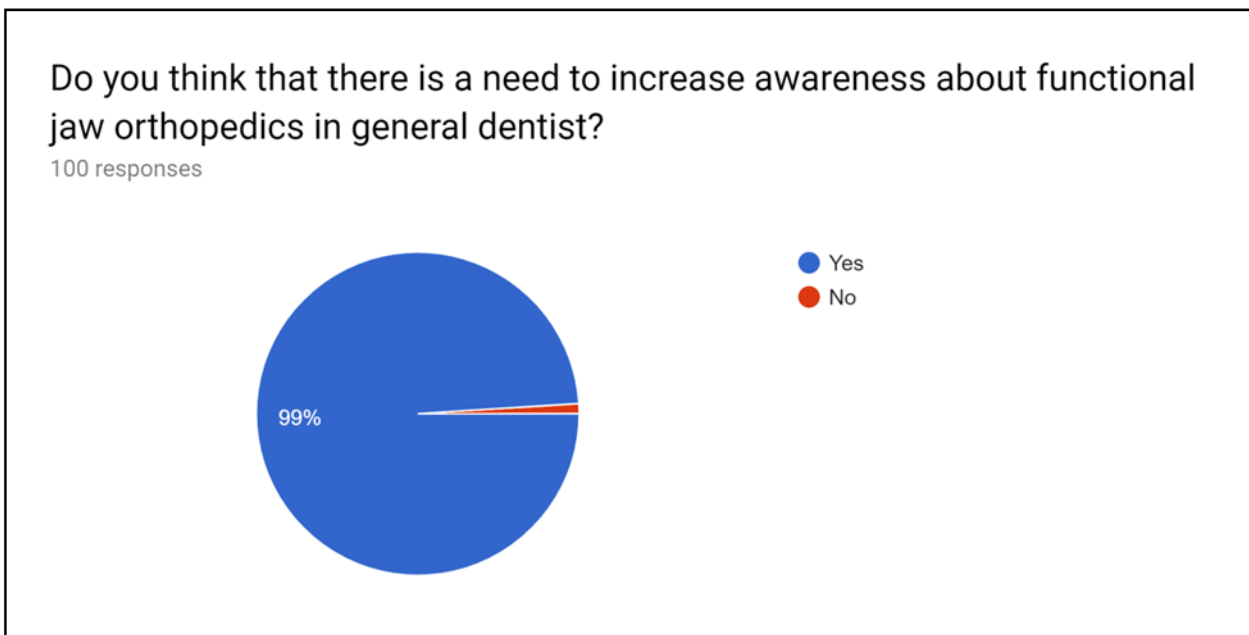
Graph - 4



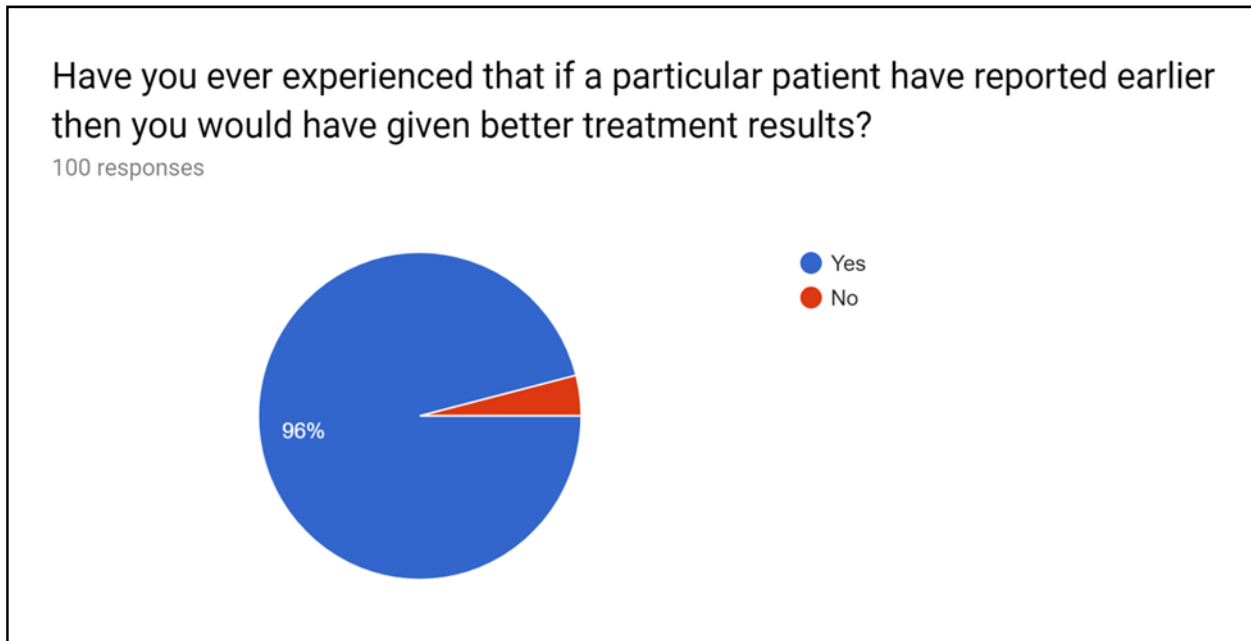
Graph – 5



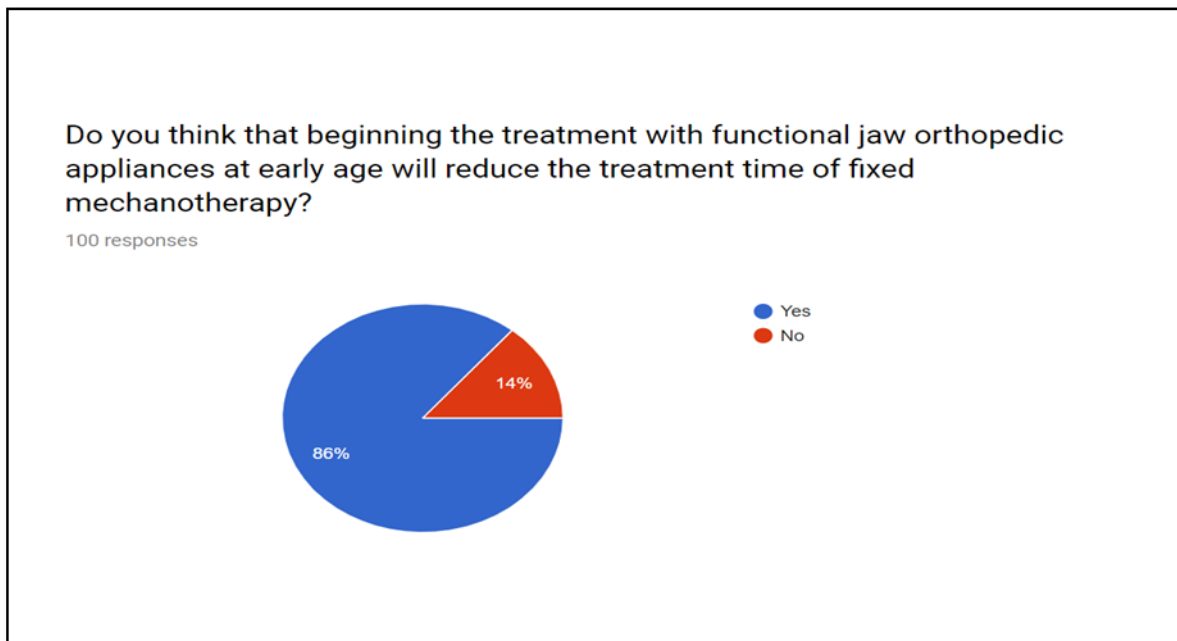
Graph – 6



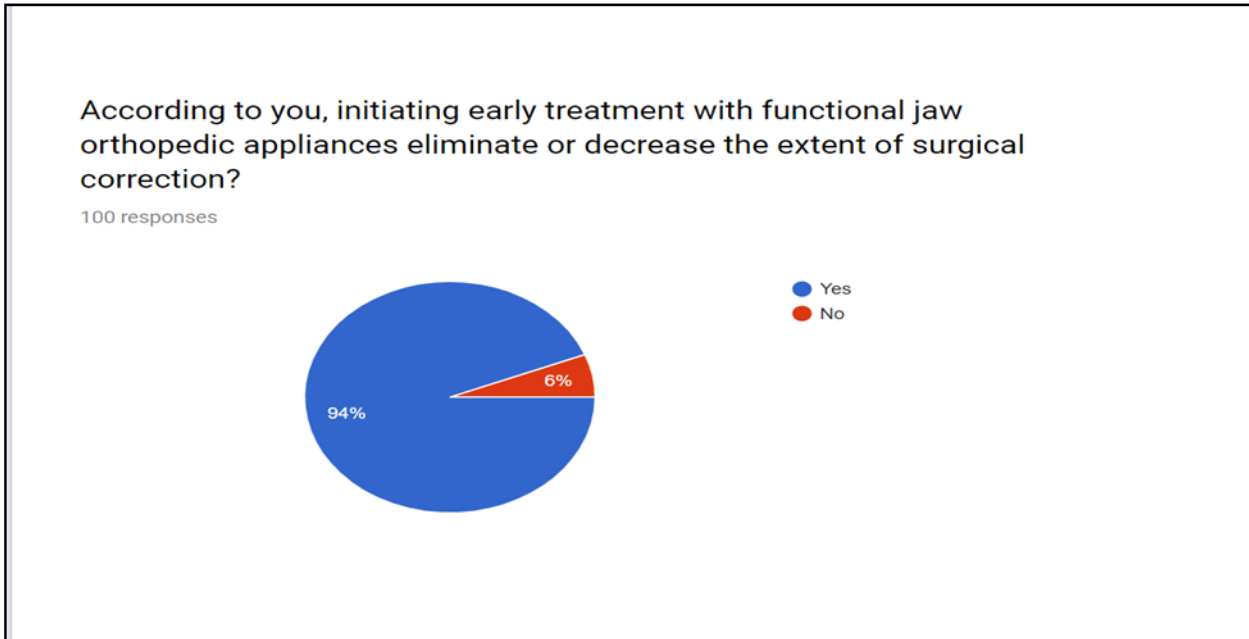
Graph – 7



Graph – 8



Graph – 9



Graph – 10

