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Current trends in smile designing among the postgraduate students in dental colleges and MDS practitioners - A Questionnaire study

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Introduction

Smile is a universal language. It plays a dominant role in facial expression. Recently, the focus on facial esthetics as an indicator of social value has increased.[1]An attractive, well-balanced smile is a pertinent treatment objective, in addition to functional occlusion. It influences a person's perceived attractiveness and is the cornerstone of social interaction. Facial attractiveness and smile aesthetics are firmly related to each other.[2]

Smile esthetics seems to be affected by a variety of dental features, each with a varied degree of threshold including the lateral negative space, arch width, shape, teeth shape, any other dental asymmetries too.[3] Achieving an esthetic smile is based on our

understanding about various components of the smile and the balance that exists between hard and soft tissues.[3]

The careful esthetic analysis is a crucial but often challenging part of modern dentistry. Although dental proportions must fit into the basic framework conditions determined by nature, dental esthetics always will be subjective.[4] In the last two decades smile designing has progressively evolved from physical analog to digital designing which has advanced from 2D to 3D.[4] Smile designing has now progressed into complete digital drawing on Digital smile designing software on the computer. This can be easily edited and can be done and undone anytime to achieve the final design balancing patient's aesthetic and functional needs.[4]

As stated by Ahmedet al,[2021] evolution has taken place from 1st generation ie from analog drawings to6th generation i.e 4D Concept.[Adding motion to the smile design process.]Digital imaging and designing help patients visualize the expected result before the treatment itself starts which enhances the predictability of the treatment.[5] Digital smile designing leads to the customization of smile design by increasing the participation of the patient in their smile design which results in a more aesthetically driven, humanistic, emotional, and confident smile.[4]

The rationale of this study is to assess and raise among various present trends in smile designing among the postgraduate students in dental colleges and MDS practitioners.

Keywords: Smile, Smile Designing, Digital Smile Designing, Smile Designing Softwares, Questionnaire Study, Survey.

Material and methods

It was a descriptive type of study. Ethical approval no Hdch/ETHICS/2023-24/028.

Study population

The study participants were postgraduate students from dental colleges and MDS practitioners across India.

Inclusion criteria

All the postgraduate students in dental colleges and MDS practitioners across the country.

Inclusion criteria were independent of the institute, gender, post graduation year, and curriculum content.

Exclusion criteria

Post graduates and MDS practitioners who denied participating in the present study were excluded from the study.

Study method

The study was carried out across India. In the process of validation, the final questionnaire was circulated among post graduate students and MDS practitioners and their responses were recorded. Based on that result, required modifications were done. A survey was formulated with the help of Google Form, and it was circulated among the participants, and data were recorded.

This survey comprised 15 questions to know current trends in smile designing. Five demographic questions related to E-mail, designation, participant name, age, qualification, college name, and MDS specification were included.

The questionnaire was sent to the experts in this field for vetting and the collected responses were included in statistical analysis. The results of the questionnaire were tabulated in Google Sheets. Data were evaluated descriptively with the use of Microsoft Excel software.

Results

In this study, there were total of 100 dental professionals, 43% were MDS practitioners and 59 % were post graduate students. Amongst them, 47 % were Prosthodontists. All of the participants agree that they glance at the patient's smile, when the patient enters in

dental clinic / hospital. Regarding patients smile, 11% of participants believed that both smile designing and restoration of teeth can improve a patient's smile. While 28% of participants agreed that their patients had undergone smile designing procedure, 80% of participants think that by attending various smile designing courses and referring to articles published on smile designing , we can come to know that smile designing is a correct treatment option for patient. As most of the patients are concerned about pain before even starting any procedure,92 % of participants think that it is not a painful procedure. Out of 100 , 44% of participants answered that normal smile is when incisal display is 2-4 mm.Various principles of smile designing includes horizontal plane , gum tissue health , vertical dimension , malalignment , facial profile , etc. Only 12 % of participants agreed with it. Majority of the participants i.e 95 % know about the golden proportion of smile designing. Other proportions include RED proportion, M proportion, and natural proportion. As compared with conventional smile designing, 80 % of participants prefer to treat patients with digital smile designing. Various smile designing software used are Planmeca Romeaxis, Exocad smile creator, 3 shape smile design , digital smile designing software, etc. 58 % of participants know about various smile designing software ,while 51 % among them use it.

The purpose of this survey was to check the current scenario of digital smile designing and to raise awareness for digital smile designing procedures especially among post graduate students.

Questionnaire

1] Normal smile is …….

A] Maxillary incisal display 2-4 mm.

B] Maxillary incisal display 4-6 mm with no gingival display.

C] Whole maxillary incisal display with 2mm gingival display.

2] Do you look at smile of patient when patient arrives ?

A] Yes B] No

3] What procedures can improve smile of patient ?

A] Restoration of teeth.

B] Smile designing.

C] Both.

D] Other …….

4] How do I know smile designing is a right option for patient ?

A] Smile designing courses.

B] Journals and articles published on smile designing.

C] Both

D] Other …….

5] Have your patient undergone any smile designing procedure ?

A] Yes B] No

6] How long does smile designing procedure take?

A] Don't know B] Other ……..

7] Is smile designing procedure painful for patient?

A] Yes

B] No

C] Don't know

8] Which among the following is /are principles of smile designing ?

A] Horizontal plane.

B] Gum tissue health.

C] Vertical dimensions.

D] Mal alignment or crowding.

E] Facial profile.

F] None of the above.

9] Do you know about golden proportion ?

A] Yes B] No

10] Do you know about any other proportion ?

A] Yes B] No

11]What will you prefer – conventional or digital smile designing ?

A] Conventional smile designing.

B] Digital smile designing.

12] Do you know about any software used for smile designing? [If no, don't attempt ques.13, 14, 15]

A] Yes B] No C] If yes [specify]…….

13] Do you use any software for smile designing ?

A] Yes B] No

14] Is your smile designing software compatible with lab ?

A] Yes

B] No

C] Don't know

15] Which of the following software are used for smile designing ?

A] Plan mecaromeaxis digital smile design.

B] Exocad smile creator.

C] 3 shape smile design.

D] Digital smile designing software.

E] All of the above.

F] None of the above.

Discussion

Smile is one of the most important facial function. It is often the measure of success or failure especially from the patient's point of view.[4]Younger people are found to be most affected, as mal-aligned teeth or spacing between teeth creates an awkward smile. Through cosmetic dentistry, we dentists can give new smiles to people that boost their confidence and self-esteem.[6] As esthetic rehabilitation, planning must be performed followed by a thorough evaluation that includes a facial analysis, dental-facial analysis, and dental analysis.[4]It can be done in one of the 2 ways i.e conventional or digital smile designing. The conventional technique is based on a planning process after clinical then radiological examination, intra and extra-oral analysis, occlusal evaluation, and impressions to fabricate study casts. But, this technique depends to a great extent on the technician's hand skills, experience, and ability to follow the guideline. However, it has a high probability for human errors to occur.[7]

Digital smile designing procedure [DSD] can be used and is a digital aesthetic planning tool in dentistry that is used to evaluate the esthetic relationship between the teeth, gingiva, smile and face. The use of DSD tools provides a new perspective for diagnosis, treatment planning and facilitates communication between dentists, technicians and patients. Using DSD design tools makes it easier to create and project a new smile design to get a pre-visualisation of the final treatment plan result. Dentists and patients have complete control over the formation of a natural smile. Digital smile design can make it easier for dentists to visualise a patient's smile to form a treatment plan and provide knowledge about the procedure to patients. The combination of conventional and digital methods appears to be the best treatment option.[6]The DSD protocol allows a thorough analysis of the esthetic principles through the drawing of reference lines on digital photographs that in a predetermined sequence are transferred to a cast model and serve as a guide for diagnostic wax-ups, thereby preventing loss of diagnostic data. The protocol allows for the viewing of the relationship between the preoperative situation and the ideal design.[4] It is also an amazing tool for communicating with patients because the clinician can clearly illustrate the issues and possible solutions, thus balancing the patients expectations as well as increasing their understanding of the treatment plan and discussions of the prognosis.[6]

Most of the dental professionals perform smile shaping procedures. Some use traditional methods while others prefer newer digital methods. There have been major advances in dental restorative materials, the smile design program, prosthetic technology, and adhesives. Patients are able to select natural teeth and smiles that match their personal preferences and expectations with advanced digital tools.

Conclusion

As the demand to improve the appearance of teeth increases, restorative materials and techniques continue to evolve to meet society's needs.By undergoing these procedures one can improve their facial features and increase their self-confidence in society.[6]Digital smile designing is not so commonly used despite of its various advantages. DSD leads to customization of smile design by increasing the participation of patient in their own smile design which result in a more aesthetically driven, humanistic, emotional and confident smile. The patient may evaluate, provide opinion, and approve the final shape of the new smile before any treatment procedures are performed thus enhancing patient's satisfaction. During this fast paced technology and time, the post graduates and practitioners should know about various components of DSD that can be projected to virtual reality glasses to foresee a desired smile and convert it into reality.

As in near future, machine learning and AI will automate aesthetic evaluation, planning, design, and treatment processes to provide customized dental care that is truly patient centered, natural looking, and in harmony with facial and other features. People need to be made aware of the procedures and post-operative effects of these procedures that shape their smiles.[6]

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