



PERCEPTIONS OF BOTH POST GRADUATE AND UNDER GRADUATE STUDENTS REGARDING SMILE DESIGN- A SURVEY STUDY

Dr. S. Mani Viknish.

Dr. Sharmila Hussain

Dr. Hemalatha. R

Dr. Arthi SP.

Dr. Vinitha A.

Dr. Pamila Mary Sebatini. M

ABSTRACT **Aim:** To evaluate perceptions of undergraduate and postgraduate dental students regarding smile design. **Materials And Methods:** A validated questionnaire was distributed online to 102 dental professionals (BDS and MDS). Data were analyzed using descriptive statistics. **Results:** Most participants (93%) considered smile design important, though 65.7% lacked formal training. Familiarity and confidence levels were modest, and only 5.9% used digital tools frequently. Nearly 90% desired further education. **Conclusion:** Smile design is valued but under-taught. Incorporating structured training and digital applications into the dental curriculum is recommended.

KEYWORDS : Smile Design, Dental Esthetics, Digital Dentistry, Questionnaire Survey, Dental Education

INTRODUCTION:

The desire to appear attractive and well-groomed is universal, and a person's smile often plays a decisive role in shaping first impressions. A harmonious and appealing smile contributes significantly to overall facial aesthetics, influencing not only physical appearance but also psychological confidence and social interactions⁽¹⁾.

Various factors, such as missing or malformed anterior teeth, can detract from the visual appeal of a smile and may impact an individual's self-esteem. Aesthetic smile composition depends on several elements including tooth alignment, proportions, shade, gingival contour, and lip framing⁽²⁾. These features must work in synchrony to achieve a balanced and natural appearance.

In modern dental practice, esthetics frequently serve as the primary concern of patients. Treatment outcomes are often judged based on improvements in the patient's smile, and the perception of esthetics varies widely due to individual experiences and cultural norms⁽³⁾.

MATERIALS AND METHODS:

A questionnaire survey was conducted among BDS ,MDS professionals. The aim of the study was to assess the perceptions of both post graduate and under graduate students regarding smile design.

The participants were selected based on the following criteria :

Education Criteria- BDS , MDS professionals.

Sample Size for the Study was 100.

Sampling Technique: Convenient sampling technique was used.

The questionnaire was created using Google Forms (Google LLC, Mountain View, California, USA) and links were distributed to participants via email, What's App and other social media platforms (Telegram, Instagram, Facebook)

Questionnaire Used:

1. Name
2. Sex
3. Email ID
4. Institution name
5. What is your level of education ?
6. Have you studied smile design as part of your curriculum.?
7. How important do you think smile design is in dentistry ?
8. How familiar are you with smile design principles ?
9. What factors do you consider when designing a smile? (select all that apply) ?

10. Have you received any specific training or education in smile design ?
11. How confident are you in your ability to assess and plan smile design cases ?
12. How often do you incorporate digital smile design tools in your practice or studies ?
13. What challenges do you face when implementing smile design concepts ? (select all that apply)?
14. Are you interested in future education or training smile design ?
15. How satisfied are YOU with your current smile ?
16. Have YOU ever considered or undergone any dental procedures to enhance your smile ?
17. Do YOU believe that a well designed smile can positively impact self confidence ?

A questionnaire validity (Aiken's V) of 0.83 was found to be sufficient. Questionnaire reliability was determined using the Cronbach alpha value. A consensus of 0.92 (excellent) was achieved among the evaluators. A brief introduction to the survey was given to the participants. The collected data was entered into a spreadsheet (Microsoft Excel, 2016). Statistical analysis was performed using descriptive statistics (numbers and percentages). SPSS (Statistical Package for the Social Science) 23.0 version software (IBM Chicago, Illinois, United States) had been used. The input parameter for the sample size calculation used as follows: 80% power of the study, alpha error 0.05, effect size 0.5, and degree of freedom as 5. The calculated sample size was 184 using G* power software version 3.1.9.2 (Heinrich Heine University, Dusseldorf). The final considered sample size for the Study was 100. The convenient sampling technique was used in the study.

Statistical Analysis:

- The Normality tests Kolmogorov-Smirnov and Shapiro-Wilks tests results reveal that all variables follow Normal distribution. Therefore, parametric test are applied to analyze the data.
- Data was entered in Microsoft excel spread sheet and analysed using SPSS software (version 26).
- Descriptive and Frequency analysis is performed.

RESULTS:

TABLE NO:1 - There was total 102 Dental professionals out of which 50 were male and 52 were female dental professionals and 57 were undergraduate students, 43 were postgraduate students and 2 were other speciality (FDS, DIPLOMA courses)

Table No:1 Characteristics Of Study Subjects

VARIABLE	N (%)
GENDER	Male 50 (49.0)
	Female 52 (51.0)
LEVEL OF EDUCATION	Undergraduate student 57 (55.9)
	Postgraduate student 43 (42.2)
	Other Speciality 2 (2.0)

Table 2 Responses To Questions Related To Smile Designing

QUESTIONS		N	%
Have you studied smile design as part of your curriculum?	Yes	65	63.7
	No	37	36.3
How important you think smile design is in dentistry?	Extremely important	45	44.1
	Important	50	49.0
	Neutral	4	3.9
	Not important		
	I don't know	3	2.9
How familiar are you with smile design principles?	Very Familiar	6	5.9
	Familiar	31	30.4
	Somewhat Familiar	54	52.9
	Not familiar at all	11	10.8
How confident are you in your ability to assess and plan smile design cases?	Very confident	6	5.9
	Confident	32	31.4
	Somewhat confident	45	44.1
	Not confident at all	19	18.6
Have you received any specific training or education in smile design?	Yes, during my undergraduate studies	16	15.7
	Yes, during my postgraduate studies	11	10.8
	Yes, through additional courses or workshops	8	7.8
	No, I haven't received any formal training	67	65.7
How often do you incorporate digital smile design tools in your practice or studies?	Frequently	6	5.9
	Occasionally	36	35.3
	Rarely	31	30.4
	Never	29	28.4
Are you interested in further education or training in smile design?	Yes, I would like to learn more	91	89.2
	No, I feel confident in my current level of knowledge	3	2.9
	I'm not sure	8	7.8
How satisfied are YOU with your current smile?	Very satisfied	20	19.6
	Satisfied	50	49.0
	Neutral	26	25.5
	Dissatisfied	4	3.9
	Very Dissatisfied	2	2.0
Have YOU ever considered or undergone any dental procedures to enhance your smile?	Yes	27	26.5
	No	57	55.9
	Considering it in the future	18	17.6
Do YOU believe that a well-designed smile can positively impact self-confidence?	Strongly agree	68	66.7
	Agree	31	30.4
	Neutral	2	2.0
	Disagree	1	1.0
	Strongly Disagree	0	0.0
What factors do you consider when designing a smile?	Facial Shape	75	15.4
	Lip Line	89	18.3
	Gingival Zenith	77	15.8
	Tooth Colour	80	16.4
	Tooth Shape	82	16.8
	Symmetry	76	15.6
	Other	8	1.6
What challenges do you face when implementing smile design concepts?	Lack of knowledge or training	47	32.0
	Limited access to resources or technology	48	32.7

	Difficulty in assessing patient preferences	24	16.3
	Time constraints	24	16.3
	Other	4	2.7

RESULTS:**Demographic Characteristics of the Study Participants**

A total of 102 participants took part in the study. The gender distribution was almost equal, with 50 males (49.0%) and 52 females (51.0%). Regarding educational status, the majority were undergraduate students (55.9%), followed by postgraduate students (42.2%), and a small proportion belonged to other specialties (2.0%).

Knowledge and Awareness of Smile Designing

When asked whether they had studied smile design as part of their curriculum, 63.7% (n=65) responded positively, while 36.3% (n=37) had not. In terms of perceived importance, a large majority considered smile design to be either extremely important (44.1%) or important (49.0%) in dentistry.

With respect to familiarity with smile design principles, over half (52.9%) identified themselves as somewhat familiar, 30.4% as familiar, while a smaller proportion were either very familiar (5.9%) or not familiar at all (10.8%).

Confidence levels in assessing and planning smile design cases varied: 44.1% were somewhat confident, 31.4% were confident, and only 5.9% were very confident. On the other hand, 18.6% reported that they were not confident at all.

Regarding formal training, 65.7% stated that they had not received any specific training in smile design. Among those who had, 15.7% were trained during undergraduate studies, 10.8% during postgraduate studies, and 7.8% through additional courses or workshops.

Use of Digital Tools and Interest in Further Learning

The incorporation of digital smile design tools was relatively low, with only 5.9% using them frequently, 35.3% using them occasionally, and a majority using them rarely (30.4%) or never (28.4%).

There was a strong interest in further education in smile design, with 89.2% expressing a desire to learn more. Only 2.9% felt confident in their current knowledge, and 7.8% were uncertain.

Personal Perceptions and Attitudes toward Smile Aesthetics

When asked about satisfaction with their own smile, 49.0% were satisfied, and 19.6% were very satisfied, while 25.5% were neutral. A small portion were dissatisfied (3.9%) or very dissatisfied (2.0%).

In terms of having undergone or considered dental procedures to enhance their smile, 26.5% had already done so, 55.9% had not, and 17.6% were considering it in the future.

The belief in the psychological impact of a well-designed smile was strong, with 66.7% strongly agreeing and 30.4% agreeing that it can positively affect self-confidence.

Factors Considered in Smile Designing

When designing a smile, participants considered a variety of factors. The most commonly cited were tooth shape (16.8%), tooth color (16.4%), and lip line (18.3%). Other important considerations included gingival zenith (15.8%), symmetry (15.6%), and facial shape (15.4%). Only 1.6% selected other factors.

Challenges Faced in Implementing Smile Design

The main challenges identified in implementing smile design concepts were limited access to resources or technology (32.7%) and lack of knowledge or training (32.0%). Additionally, 16.3% cited both difficulty in assessing patient preferences and time constraints. A small proportion (2.7%) reported other unspecified challenges.

DISCUSSION:

Digital smile designing is a technique which utilizes advanced software along with scientific principles to design the smile of the patient. Patient satisfaction is crucial for the successful acceptance of the final restoration. The software allows to design the final prosthesis and show it virtually to the patient. Smile designing requires additional knowledge and technical skills to use the software. In this study, the knowledge and perceptions of post graduate students of

various faculties and under graduate dental students regarding the ability to smile design was examined. This was done using questionnaire with google forms and was circulated in social media to the participants. 12 closed ended questions was designed in the questionnaire to find out the level of knowledge and interest in smile design for patients. The study have 102 dental professionals with 50 males and 52 females, so the gender distribution was almost equal to the study. 43% were postgraduates , 2% diploma students and 57% were undergraduate students were involved in the study. The demographic samples taken for the study were fairly uniform and standardized.

Regarding the knowledge of smile designing, more than 50%(63%) dental professionals had studied smile designing in their curriculum. In a study by Renuka^[4] et al., similar results were obtained regarding the knowledge of smile deigning. The results showed that, greater amount of the curriculum should be included for smile designing so that all dental professionals have good knowledge of smile designing. Dental professionals in this study however felt that is extremely important to have a knowledge of smile designing. Dental professionals when questions regarding the familiarity of smile design procedures, half the participants were somewhat confident regarding the procedures. The results shows that more exposure is required for dental professionals. In a study by cracel- nogueira⁽⁵⁾, esthetic perceptions of smile was compared between dental professionals, lay persons and dental graduates. The results showed that dental professionals were able to perceive small changes like mid line shift compared to lay people the study proposed that dental student in their clinical years should be encouraged to understand the perception of smile esthetics, to be able to address the needs of the patient and fulfill their expectations. regarding in this study, the knowledge to use mile design tools ad software, very few dental professionals frequently accessed smile design tools. This indicates special consideration an modification in the curriculum including skill training are required for dental professionals to prevalently use smile designing tool as a treatment option.

Regarding attitude towards smile designing, questions were addressed to the participants to understand their experience with smile designing . most of the participants (49%) were satisfied with their current appearance. Most of them agreed that a good smile will boost their self confidence. Regarding the attitude towards contributing factors towards them difficulties in implementing smile designing , most of the dental professionals agreed that, they lack training and had limited access to the technology. In a study by Smaranda [6] et al., who compared the smile evaluation of laypersons and dental professionals, proposed that dentist should get better train in digital dentistry and incorporate esthetics consideration in research and clinical practice.

Limitations of this study include that, demographic group selected for the study was within a very narrow range of postgraduate and undergraduate students. The results will reflect only for that particular age group of dental professionals. Additional study may be done with the larger and varied samples of general practitioners, specialist, and academicians.

CONCLUSION :

Digital smile design is one of the leading advances of prosthodontics as the younger generation is more conscious about their appearance and smile. Patients have high esthetic demands and dental professionals have to be equipped both in skill and knowledge of digital smile design in order to be successful. The results of this study shows that, dental curriculum can include digital smile design in order to improve the ability of the dental professional to effectively treat the patient. The final outcome of the questionnaire study is that the digital smile design is genuinely useful tool that every dental professional should be equipped with.

REFERENCES:

1. Calamia JR, Wolff MS, Levine JB, Lipp M, Cisneros G. Smile design and treatment planning with the help of a comprehensive esthetic evaluation form. *Dent Clin North Am.* 2011;55(1):187–209.
2. Alikhasi M, Yousefi P. Smile design mechanical considerations. *Dent Clin North Am.* 2022;66(3):477–87.
3. Omar D, Duarte C. The application of parameters for comprehensive smile esthetics by digital smile design programs: a review of literature. *Saudi Dent J.* 2018;30(1):7–12.
4. Renuka K, Dhanraj M, Jain AR. Evaluation of knowledge and awareness of smile designing among dental students: A questionnaire-based survey. *Drug Invention Today.* 2018;10(9):1832–6.
5. Cracel-Nogueira AM, Pinho T. Assessment of the perception of smile esthetics by laypersons, dental students and dental practitioners. *J Clin Exp Dent.* 2013;5(5):e218–22.
6. Rusu LC, Smarandache CG, Porojan SD. Smile perception between dentists and laypersons: aesthetic considerations. *Medicine and Pharmacy Reports.* 2019;92(1):68–74.