

## Preceptions in the principles and designing of smile



The smile design is a specialized and applied dental skill. The approach is multidisciplinary and the major roles are played by the prosthodontist. The evolution of smile design science (SDS) is significant from early anthropometric observations, applications in removable denture esthetics and to the present digital applications.<sup>[1]</sup> SDS can be differentiated in accordance to the edentulous, partially edentulous, and dentulous conditions. The initial concepts on esthetics originated from the complete denture science, developed to enhance denture esthetics. With evolution, the principles were employed in fixed prosthodontics and currently in dentulous situations. SDS is broadly observed in facial, dentogingival, and teeth components. The establishment of these components involves a multidisciplinary approach and a comprehensive understanding.<sup>[2,3]</sup>

The teeth elements in the smile designing primarily involve the size, shape, form, color, and texture of the teeth.<sup>[4,5]</sup> Customizing these elements to the patient's perceptive can enhance the dynamics of esthetics. Many prosthodontic concepts have been applied in SDS and esthetics. The thoughts majorly involve the principles of teeth selection and arrangement of complete denture. Frush and Fischer proposed the thoughts of initial teeth customization in removable complete denture.<sup>[6]</sup> Lombardi proposed the principles of esthetics to achieve the denture dynamics which forms foundation of esthetic dentistry.<sup>[7]</sup> The art and science of these concepts forms the basics of esthetic ideologies and SDS.

Conventional smile design and treatment were done with diagnostic wax up, estimation, and restoration. In the present and future, the analysis is assisted by technology. Digital Smile Design, Photoshop, and other software are used for evaluation and diagnosis and in esthetic corrections. The integration of these toward milling/printing technology aids in more precise restorations than conventional managements. The future shall be more in terms of applications of artificial intelligence, advance technologies in smile designing, and more meticulousness restorations.<sup>[8]</sup>

Irrespective of technological advances, the ultimate objective shall be effective planning and efficient treatment that can benefit the patient.<sup>[9]</sup> The integration should be subconscious to obtain the best objective. There should be knowledge on all aspects of specialties to achieve the optimum results. The analysis initiates from the patient complaint, analysis on tooth forms, shape, size, gingival color, position, pigmentation, interdental papilla, lip positions, skin tone, teeth exposure, and facial esthetics. The knowledge on materials, science behind the use, restoration techniques, skills, surgical proficiency, and diagnostic knowledge is essential to establish the same.<sup>[1,3,4]</sup>

Early SDS emphasized less on the facial components and surgical correction. The surgical modifications require in-depth understanding of esthetic science. The smile dynamics are enhanced when there is an integration in designing and treatment planning with craniofacial structures. New software aids in providing the early realistic views on treatment planning and more treatment accuracy. Digital planning has to be exercised with caution. More importantly, in many situations, the prognostic parameters of dental health are often overlooked. It is also important to stabilize, preserve the oral health and oral structures – teeth, gingiva, and periodontium, and plan for a long-term prognosis, rather than instant correction or replacement.<sup>[1,3]</sup>

Extensive studies have been done to determine the proportions, relationships between teeth and various structures for smile designing. Various proportions have been proposed, justified and contradicted in literature.<sup>[10]</sup> Very few studies have established the relationship and provided definitive data on esthetics and smile. In literature these are discussed in the concept of principle of repeated ratios of esthetics which justifies on a proportion but does not provide a decisive value.<sup>[7]</sup> A definitive ratio exists in human that can be compared between the teeth, face and divisions of cranio-facial structures. The idea of proportions is more related to the concept of repeated ratio and it is essential to simulate the existing rather than debating. Proportions can

be used as a guide than rules to be followed in smile design and esthetic restorations. In the future, these studies have to be designed with a larger sample size and more importantly with considerations of the external validity.<sup>[11]</sup>

Smile design is applied skill than a super specialist approach. Every procedure of prosthodontic restoration involves an adaptation of various parameters of SDS and esthetic treatment planning. The rehabilitation procedures support to achieve the function, esthetics, and balances to establish functional esthetics. The advancements in technology are essential and beneficial, but it majorly reflects on the fundamentals that should not be overlooked.

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