Smile Design Wheel™: A practical approach to smile design

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Modern trends in cosmetic dentistry and media coverage of celebrities have increased public awareness of dental aesthetics. People now know that smile aesthetics play a key role in their sense of well-being, social acceptance, success at work, and relationships, and self-confidence. The aesthetic expectations and demands of dental patients have increased substantially. Now, a glowing, healthy and true smile is no longer available only to millionaires and movie stars. Therefore, many dentists are incorporating various smile design protocols in their daily practice to meet the increasing aesthetic demands of their patients.

Smile aesthetics

A smile is a facial expression that is closely related to the emotions and psychological state of a person. A smile is exhibited when a person expresses happiness, pleasure or the emotions and psychological state of a person. A smile is defined as the science of behavior and cognitive processes. Behavior deals with any action or reaction of a living organism that can be observed or measured. In other words, behavior processes deal with every aspect of our mental life: our thoughts, memories, mental images, reasoning, decision-making, and so on, in short, with all aspects of the human mind. In smile design, we normally try to understand the second part of psychology, i.e. the human mind or rather the minds of our patients. There are three fundamental zones we consider in detail for the psychological pyramid: perception, personality and desire.

Perception

Perception is the process through which a person can select, organise and interpret input from their sensory receptors. A person cannot imagine beauty and aesthetics without some input in advance. The media is the most common source of information at present regarding beauty and aesthetics. A patient usually conceives his or her own perception of smile aesthetics based on his or her own personal beliefs, cultural influences, aesthetic trends within society and information from the media.

Dentists need to communicate with their patients to determine such information during the initial consultation, which helps in understanding the patient’s perception of the treatment result. The use of questionnaires, visual aids, such as previous clinical cases or smiles of various celebrities, can aid immensely in this process.

Personalit

According to the human psychology, personality is an individual’s relatively stable pattern of behavior, thoughts and emotions. It is to be noted that each patient’s problem or concern should be comprehensively evaluated with respect to his or her personality type. According to Roger F. Levin, there are four personality types:

Driven: This type of person focuses on results, makes decisions quickly and dislikes small talk. They are highly organised, like details in communication, and are businesslike and assertive.

Expressive: This type of person wants to feel good, is highly emotional, makes decisions quickly, dislikes details or paperwork, and likes to have a good time.

Amiable: People with this personality type are attracted by people with similar interests, fear consequences, are slow in decision-making, react poorly to pressure, are emotional and slow to change.

Analytical: This type of person requires endless details and information, has an inquiring mind, is highly exacting and emotional. This type is the most difficult to convince and takes the longest to reach a decision.

Desire

Desire is a subjective component. Increased public awareness of smile aesthetics through the media has led to a rapid increase in patients’ desires and levels of expectation. Patients are now willing to pay for the enhancement of their smile aesthetics. Therefore, the ethical responsibilities of cosmetic dentists in identifying the need or want-based desires of patients have also increased. The desires and levels of expectation in many patients are higher than what is clinically achievable, and it is the clinician’s duty to explain and guide patients towards a realistic aesthetic goal.

The psychological assessment of any person is very subjective; however, aspects like perception, personality, expectation or desire are important for the smile design procedure. Patient satisfaction is closely related to these aspects. Hence, understanding the pyramid of psychology is an integral aspect in smile design.
The pyramid of health is divided into three zones: general health, specific health and dental/gingival health. The health pyramid assessment and its management play a vital role in most cases, as patients may have certain limitations owing to their health, like uncontrolled diabetes, soft-tissue pathology, poor bone structure, poor oral hygiene, tooth decay, periodontal disease etc., which should be addressed prior to functional and aesthetic treatment.

The health pyramid assessment process includes patient history (medical, dental, nutritional), examinations (extraoral, intra-oral) and investigations (radiographs, pulp vitality test, study models analysis). Various types of questionnaires and clinical examination and investigation protocols can be used to obtain the necessary information relating to the patient’s health. The clinician can use this information to prepare a person-alised treatment protocol. All three components of the pyramid of health should be established within these limits before starting any aesthetic restorative procedure on a patient.

Step III: Restore—The pyramid of function

Function is related to force and movement. Hence, for the pyramid of function assessment, the existing occlusion, comfort and phonetics are performed with the evaluation of para-functional habits, level of comfort during chewing and deglutition, and temporomandibular joint movement. The clarity of normal speech and pronunciation are also examined. The occlusion, comfort and phonetics components of the functional pyramid should be restored and maintained at an acceptable level before starting the treatment of any aesthetic component.

Step IV: Enhance—The pyramid of aesthetics

The pyramid of aesthetics is the last but most sensitive pyramid of the Smile Design Wheel, as aesthetics has both subjective and objective aspects. The assessment of the subjective aspects—perception, personality, desire—is carried out during the pyramid of psychological assessment. It is to be noted that the definition of the objective aspects depends on the distance (focal length) used to visualise the aesthetics pyramid component. Hence, the aesthetics pyramid can broadly be divided into three major zones: macro, mini, and micro.

Macro-aesthetics

Macro-aesthetics deals with the overall structure of the face and its relation to the smile (Fig. 6). To appreciate the macro-aesthetic components of any smile, the visual macro-aesthetics distance should be more than 5 feet. However, in clinical practice the assessment of the macro-aesthetic components is done using various facial photographs with geometric and mathematical appraisals, using reference points and their interaction. Various facial reference points and guidelines for macro-aesthetics assessment for orthognathic and facial cosmetic surgery; however, in smile design the following macro-aesthetic guidelines are considered fundamental:

- Facial midline;
- Facial thirds;
- Interpupillary line;
- Naso-labial angle; and
- Rickett’s E-plane.

Mini-aesthetics

Mini-aesthetics deals with the aesthetic correlation of the lips, teeth and gums at rest and in smile position (Fig. 7). The aesthetic correlation can be appreciated properly when viewed at a closer distance than the visual macro-aesthetics distance.

The visual mini-aesthetics distance is similar to the across-the-table distance, which is normally within 2 to 5 feet. There are various guidelines in aesthetics based on the relationship and ratio between lips, teeth and gingival tissue. These can be assessed during mini-aesthetic assessment using frontal, vertical and transverse characteristics of the smile. Clinical photographs are the basic tools for mini-aesthetic analysis. The smile can be assessed at rest (M-position) or smile (E-position).

In the M-position, the following references are measured and analysed:

- Commisural height;
- Philtrum height and visibility of the maxillary incisors.

In E-position the following references should be analysed:

- Smile line (lign):
- Dental midline;
- Smile symmetry;
- Buccal corridor;
- Display zone and teeth visibility;
- Smile index; and
- Lip line.

Micro-aesthetics

Micro-aesthetics deals with the fine structure of dental and gingival aesthetics (Fig. 8). Mini-aesthetics can be appreciated at a visual micro-aesthetic distance of less than 2 feet or a normal make-up distance. For the clinical assessment of micro-aesthetic components of the teeth and gingival tissue, appropriate illumination and magnification tools are required for intra-oral examination. Necessary clinical intra-oral photographs should be taken for documentation and future reference.

For micro-aesthetics, the detail of the individual tooth structure and its relation to the surrounding gingiva and the adjacent teeth should be analysed. The following are the major points to be considered:

- Upper centrals (tooth size ratio);
- Principle of golden ratio;
- Axial inclination;
- Incisal embrasures;
- Contact point progression;
- Connector progression;
- Shade progression; and
- Surface micro-texture.

In smile design, the aesthetic conditions related to gingival health and appearance are an essential component. The gingival shape, position, embrasure, and contour in relation to the teeth are interdependent. The following are major aspects that should be addressed during smile design to achieve gingival or pink aesthetics:

- Gingival shape;
- Gingival contour;
- Gingival embrasure;
- Gingival alveolus; and
- Gingival height (position or level).

To achieve higher patient satisfaction and long-lasting treatment results, the following should be the sequence in any smile design procedure: proper comprehension of psychological aspects, the establishment of health and the restoration of function within its normal limit, and the subsequent enhancement of aesthetic components.

Conclusion

Today, various protocols of smile design are available in cosmetic dentistry. However, most clinicians wish to use the simplest protocol with the most predictable results. It is to be noted that smile design should always be a multifactorial decision-making process that allows the clinician to treat patients with an individualised and interdisciplinary approach.

The Smile Design Wheel presented in this article clearly indicates the most important components (PIFAA pyramids) of smile design, their clinical significance and sequence to be maintained during the smile design procedure. I believe that the Smile Design Wheel is a simple and practical protocol in smile design that can help the clinician to easily comprehend the ‘complex’ smile design procedures of aesthetic dentistry.

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