A Smile Analysis in Completely Edentulous Patients Treated by Graduate Students

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Abstract

To evaluate smile analysis in completely edentulous patients. Smile is a main component in presentations of a human being favoring social acceptance. A non harmonic smile decreases the beauty of the face causing discomfort in the social activity Edentulous in a condition of being toothless. Details were collected from patients visiting dental college and reviewed patient records who underwent denture treatment between june 2019 and march 2020. In the present study we analyzed visibility, fullness, teeth size, buccal corridor space and smile line.. The study reviewed the patients who had undergone treatment between June 2019 – April 2020.Data was entered in a methodological manner and was verified manually. The available data was subjected to statistical tests using - Chi square test statistical software- SPSS software by IBM.The present study indicates the dentures constructed by training students are good at fullness, visibility and teeth selection criteria but there is lack of adequate buccal corridor space and smile curves being incorporated into dentures.

***Key words**: smile line; visibility; complete denture; fullness; buccal corridor space*

Introduction

Increased life expectancy and increase in population, creates high demand in dental care especially in the field of prosthodontics.[1] Prosthetic rehabilitation in patients with bony defects is critical.[1,2] Good appearance is not considered a variety sign but literally a need and dentistry has a fundamental role in obtaining it. Since the face is the exposed area of the body and constitutes an important component of the mouth a prominent line.[3] The smile constitutes an important component in the presentation of a human being favouring social acceptance.[4] A non harmonic smile is one of the most important facial expressions that demonstrate friendship, pleasant sensation and appreciation.[5] Smile according to webster a change of facial expression involving aa brightening of the eyes, an upward curving of the corners of the mouth with no sound and less muscular distortion of the features laugh that may express amusement, pleasure, tender, affection, approval, restrained with irony decision or any other emotions.[6] Frush and Fisher and Jamerson discussed the concept of smile line and defined it has the harmony between the curvature of the incisal edges of the maxillary anterior teeth and the upper border of the lower lip.[6–8] According to sarbi smile line is the amount of vertical tooth exposure. On smiling the height of the upper lip relative to the maxillary central incisors and crown height.[9]

Different socio demographic variables such as age,gender, and systemic disease May affect satisfaction with complete dentures.[10] The comfort, function, and esthetics must be restored altogether while treating a completely edentulous patient.[11] One of the main objectives in selecting and arranging artificial teeth is to produce a prosthesis that defies detection.[12]

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Complete dentures consist of two main parts, namely the artificial teeth and the denture base.[13] The artificial tooth is used to restore the appearance of the natural tooth, its occlusion oral function and to assist in word pronunciation. [13,14] Patients requiring complete dentures usually expect comfort first, followed by harmonious appearance and efficiency.[15] Besides, on receiving their first dentures, patients often expect to appear similar to when they had their natural teeth.[16] Therefore, correct selection of artificial teeth is essential to achieve a pleasant esthetic outcome.The anterior teeth are the ones primarily selected to satisfy esthetics[17]. The selection requires scientific knowledge as well as artistic skill of the dentist.[18] Teeth that are of a proper size are essential in achieving a natural looking denture.[19]

With increasing dental awareness, the scope of implant therapy has increased manifold.[20] This most advocated therapy for replacement of teeth, however, holds many prosthetic complications such as crown loosening because of short abutments, esthetic failures, ceramic fracture, and inappropriate proximal contacts leading to food accumulation, and associated peri-implant diseases.[21] The prosthetic component failures of the dental implant have also been frequently associated with screw loosening or fracture hence many people opt for complete denture.[22]

The denture base is the foundation of the artificial tooth and can be used to restore the appearance of the natural tooth. It is recommended to keep the dentures well relieved from the gingival margin wherever possible as in recent decades, microbial resistance has reached an incredibly alarming level. [23-,24] It is important to restore the esthetics of a complete denture patient to re-store their appearance. Restoring the function as well as aesthetics is equally important.[25] It is also important to give proper oral hygiene instructions to the patient as acute spreading bacterial infection affects the quality of the denture.[26] Proper dental care during denture wearing is very important.[27]

Materials and Methods

The present study was done in Saveetha dental college Chennai with required approval from the Ethical board. .Retrospective study data analyzed from june 2019- feb20. Case sheet verification was done by 2 expert reviewers .To minimize sampling error, inclusion of all available data was done and verified by the experts. The screening led to a pool of 4048 patients reporting to clinics and the search narrowed 355 patient details based on the inclusion and exclusion criteria on complete denture treatments. Inclusion criteria include both arch complete denture treatments,photographs with good frontal views,patients with no facial abnormalities or asymmetries. Exclusion criteria include single complete denture, any maxillofacial defect associated with complete dentures. Evaluation was done using photographs taken at the time of treatments. The evidence was looking at various parameters such as lip fullness, teeth visibility, buccal corridor space and smile line. These details were scored as adequate or inadequate to look for the parameter differences. These parameters define the denture esthetics and a skill which requires to be developed by the dental operator. Data was entered in a methodological manner and was verified manually. The available data was subjected to statistical tests using - Chi square test statistical software- SPSS software by IBM.

Results and Discussion

The retrospective analysis of 355 complete dentures patients details revealed that more than half of the subjects were above 50 years. Males were 205 (57.2%) and females were 150 (42.8%)(figure1)The denture visibility was good in 73.17%% of the cases, and there was adequate lip fullness in about 75.20% of the cases. With regard to buccal corridor space there was a high number of inadequacy in 51.53% cases and smile lines were not following lower lip curvatures in 58.36% of cases. (figure 2-6)

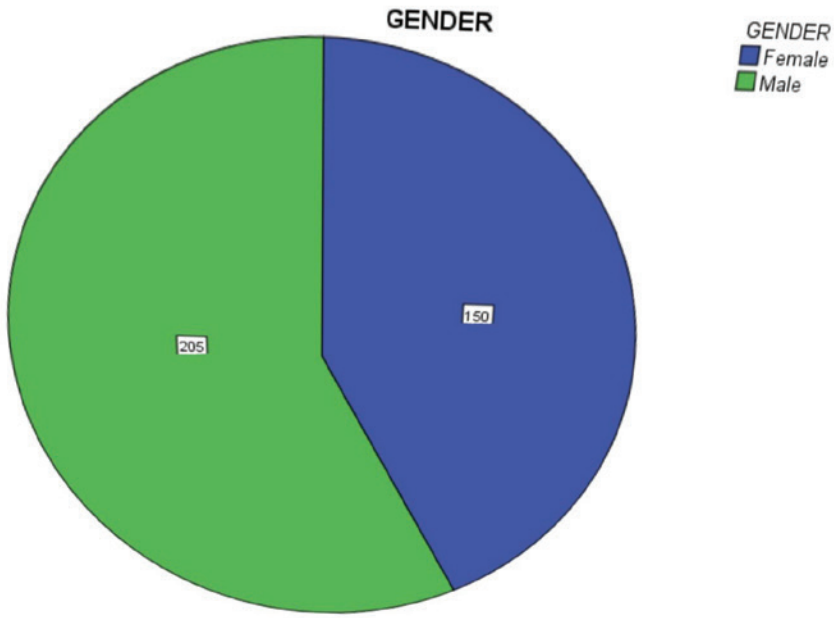

Figure 1: The pie chart represents the distribution of study participants based on gender. The graph shows a higher percentage of male participants with 57.2%(205) and females with 42.8% 150. Blue represents female distribution and Green represents male distribution.

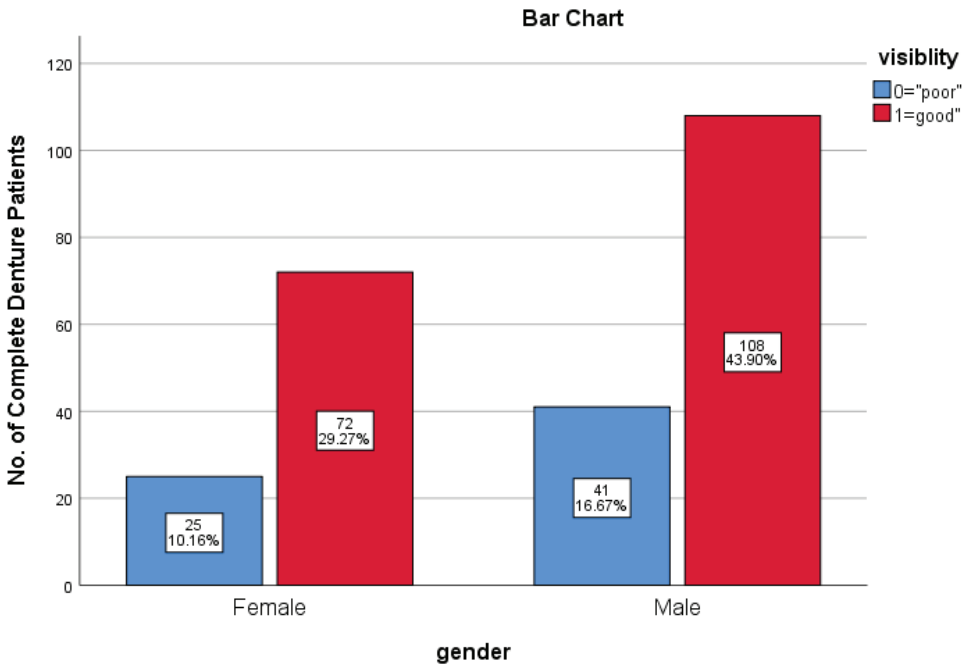

Figure 2 - Bar chart showing the association between Gender and visibility of anterior teeth X axis represents the gender and Y axis represents the percentage of visibility .Chi square test was done and association was found to be statistically not significant .Pearson chi square value 0.877 ,DF:2, P value - 0.445 (> 0.05) statistically not significant.Proving that in the dentures delivered by graduate students anterior teeth visibility was the same in both males and females.

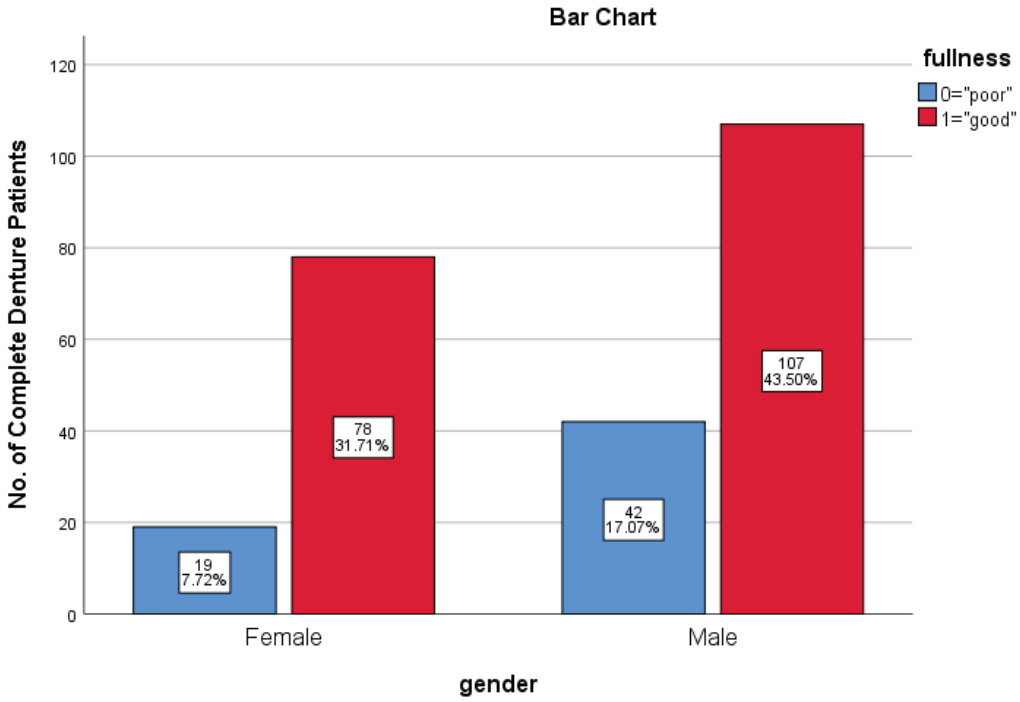

Figure 3 - Bar chart showing the association between Gender and fullness of anterior teeth X axis represents the gender and Y axis represents the percentage of fullness.Chi square test was done and association was found to be statistically not significant .Pearson chi square value 0.971 ,DF:2, P value - 1.000 (> 0.05) statistically not significant. Proving that lip fullness was the same in both genders.

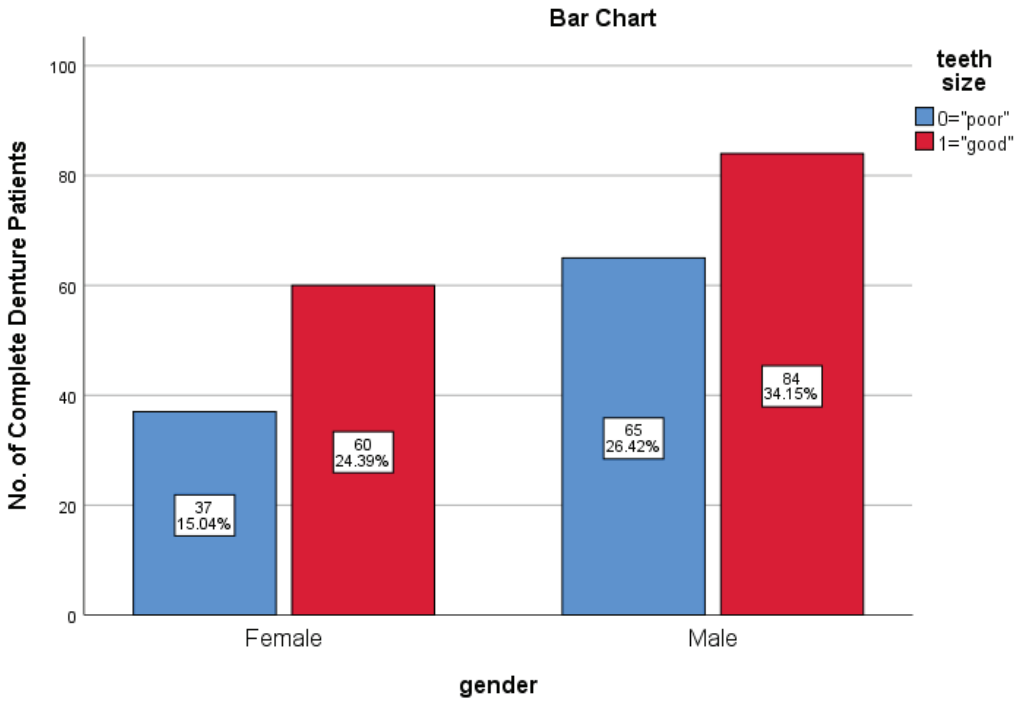

Figure 4 - Bar chart showing the association between Gender and teeth size of anterior teeth X axis represents the gender and Y axis represents the percentage of teeth size.Chi square test was done and association was found to be statistically not significant .Pearson chi square value 0.940 ,DF:2, P value - 0.853 (> 0.05) statistically not significant.Proving that teeth sizes were not different among the genders.

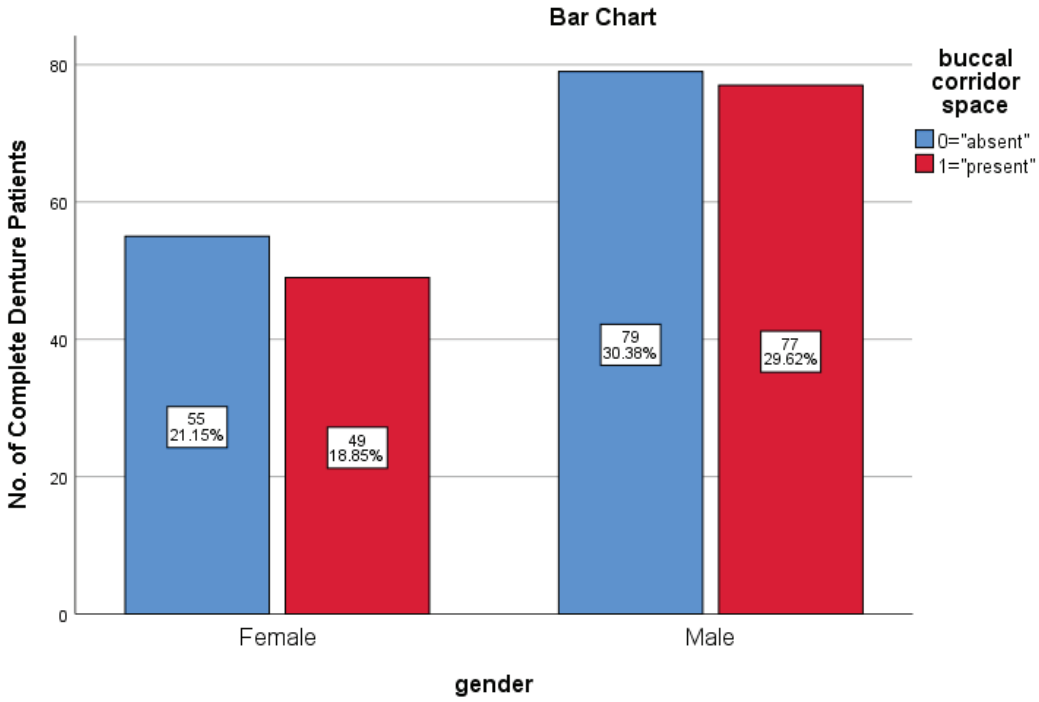

Figure 5- Bar chart showing the association between Gender and buccal corridor space X axis represents the gender and Y axis represents the percentage of buccal corridor space.Chi square test was done and association was found to be statistically not significant .Pearson chi square value 0.759 ,DF:2, P value - 0.677 (> 0.05) statistically not significant. Buccal corridor space was not visible both in males and females.

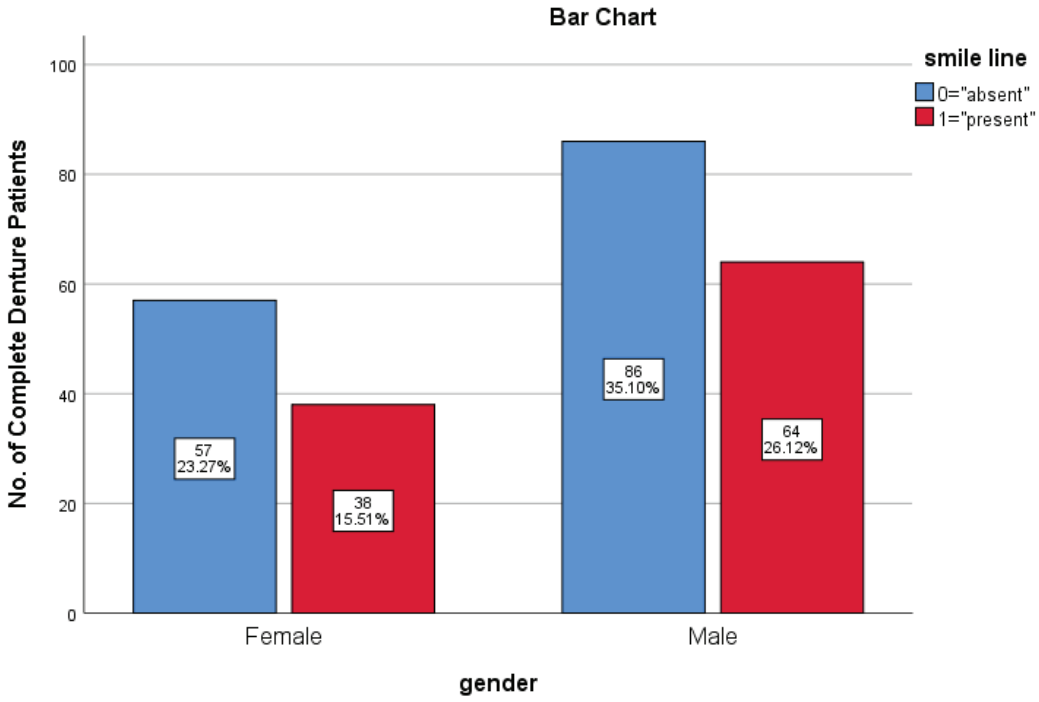

Figure 6 - Bar chart showing the association between Gender and smile line. X axis represents the gender and Y axis represents the whether smile line were seen or not .Chi square test was done and association was found to be statistically not significant .Pearson chi square value 0.759 ,DF:2, P value - 0.6777 (> 0.05) statistically not significant. Proving that smile lines are not different in males and females.

In the present study it was observed that the smile line curve was inadequate in both genders but predominantly more seen in females. Al.juboori MS et al. too reported similar findings with females as they have a 2.5 times more prevalent to high smile curve whereas males have more of low smile curve.[28] The Buccal corridor – defined by Frush and Fisher as the space created between buccal surfaces of position teeth and commissure of the lips when the patient smiles.[29] The teeth should fill partially and a visible black back drop add to the esthetics. This feature was again inadequate in both gender with more females not having adequate buccal corridor space in the present study with statistically non significance p> 0.05- chi square test. A study by Trite Trikku et al differed in our opinion as they suggest attractive smiles had least buccal corridor display and maximum inter canal and inter molar width.[30] The visibility, fullness parameters associated with the complete dentures were adequate and were statistically insignificant.

The smile line curve to follow the lower lip line is important and requires more visualization and patient cooperation during denture trial. The most common issues during denture trial being lack of retention also plays a role in misleading the denture trial step. There are studies reporting on issues relating to poor denture retention and esthetic error during denture trial.[31] Currently there are reports on computer based images or smile designing softwares available, may be use of the same can reduce such errors in denture construction.[32] The buccal corridor space is a area of differences among different clinicians. As many orthodontists look at buccal corridor space presence as not very esthetic, but others differ with this opinion.[33] The presence of buccal corridor space adds to the value of smile by acting as a backdrop and making smile pleasant.[34] There are differences in the point of skeletal changes or increased buccal pad thickness, which sometimes dictate the adequate visibility of the buccal corridor space.[35,36]The present study can be extended as a multi center study with adding or including other speciality in having an opinion on buccal corridor space and esthetic smile.[37]. Also digital smile designing or planning of complete denture at the diagnostic stages and executing the same can be an alternate solution.[38]

Conclusion

The present study indicates the complete dentures constructed by undergraduate students are good at anterior lip fullness, teeth visibility criteria, but there is lack of adequate buccal corridor space and smile line curves being incorporated into dentures which make up to the complete esthetic impact.

Acknowledgements: The authors would like to acknowledge the help and support rendered by the Department of Prosthodontics and Information Technology of Saveetha Dental College management for their constant assistance with the research.

Conflict of Interest: None declared.

Source of Funding: Self

Ethical Clearance: It is taken from "Saveetha Institute Human Ethical Committee" (Ethical Approval Number- SDC/SIHEC/2020/DIASDATA/0619-0320)

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