

Assessment Of Maxillary Single Complete Denture Treatment In A Private Dental College: A Retrospective Study

Type of manuscript: Retrospective study

Running title: Maxillary single complete denture treatment

Rachel ASSESSMENT OF MAXILLARY SINGLE COMPLETE DENTURE TREATMENT IN
A ***Paul***

*Saveetha Dental college & Hospitals,
Saveetha Institute of Medical and technical Sciences,
Saveetha University,
Chennai 600077
Tamil Nadu, India
E-mail ID- 151601044.sdc@saveetha.com*

Ashok V

Professor and Head
Department of Prosthodontics,
Saveetha Dental college & Hospitals,
Saveetha Institute of Medical and Technical Sciences,
Saveetha University,
Chennai 600077
Tamil Nadu, India
E-mail ID - ashok@saveetha.com

Deepa Gurunathan

Professor and Head
Department of Pedodontics
Saveetha Dental college & Hospitals,
Saveetha Institute of Medical and Technical Sciences
Saveetha University,
Chennai 600077
Tamil Nadu, India
E-mail ID- deepa@saveetha.com

Corresponding author:

Ashok V
Professor and Head

Department of Prosthodontics,
Saveetha Dental college & Hospitals,
Saveetha Institute of Medical and Technical Sciences,
Saveetha University,
Chennai, Tamil Nadu, India
E-mail ID - ashok@saveetha.com

ABSTRACT:

Aim: The aim of the study is to evaluate the frequency of the number of patients who undergo maxillary single complete denture in a private dental college, Chennai.

Materials and Methods: The data were reviewed from patient records in a private dental college from a particular time period of June 2019 to March 2020. The data collected was then tabulated in excel and exported to SPSS by IBM. The outputs were obtained through statistical analysis..

Results: The results obtained were based on age, the most common age groups found were 44- 49 years. Based on gender, the gender predilection was towards females. The total number of patients who were diagnosed was greater than the number of patients who underwent treatment (51.2%)

Conclusion: Within the limits of the study, the maxillary complete dentures are the most prevalent in the female gender of the age group 44-49 years of age. The number of patients treated were less compared to the number of patients diagnosed with partial edentulous maxilla.

Keywords: Edentulism, age, gender, treatment, denture

1. INTRODUCTION:

Edentulism is defined as the loss of permanent teeth and is the treatment outcome of a multifactorial process which involves a biological process (dental caries, periodontal disease, trauma and others) as well as non-biological factors related to dental procedures (access to care, patient preferences).[1] The incidence and patterns of tooth loss have been studied to a certain extent in western countries and a few such studies have been carried out in India as well.[2] Dental caries and periodontitis are caused mostly by microorganisms, but age, gender, oral hygiene and lifestyle (tobacco smoking, alcohol intake) may modify the progression of these disorders. The influence of socio- economic and the sociodemographic factors on edentulousness have been well-documented. Edentulism can lead directly to impairment, functional limitation, physical, psychological, and social disability, and handicap. [3] Hence, the impact of edentulism on general health should be examined by analyzing the major dimensions of health such as physical symptoms and functional capacity, social functioning and perception of well-being.

2. IMPACT ON ORAL HEALTH

Bone loss is an ongoing process following tooth loss, the mandible is affected four times more than the maxilla. Edentulism is found to have a significant effect on residual ridge resorption, which leads to a reduction in the height of alveolar bone and the size of the denture bearing area. This reduction affects face height and facial appearance, which are altered following total tooth loss. The loss of alveolar bone height and width also leads to substantial changes in the soft-tissue profile, such as protrusion of the mandibular lip and chin. There exists an interpatient variation in these anatomic degenerative changes, and the etiology of these is still unclear. It is believed that a combination of local and systemic factors may be contributors; these include age, gender, duration of edentulism, parafunctional habits, general health, and several diseases. [4]

Single complete dentures may be opposed by: (a) Natural teeth, (b) fixed restorations, (c) a removable partial denture: or (d) an existing complete denture. Because of the presence of longstanding uncontrolled occlusal forces, important changes in the denture foundation can occur. Hence, a single denture patient may have to undergo preventive surgery, occlusal adjustment of the remaining teeth. [5]

This study will help us find the incidence of missing teeth, age and the various treatment options that can be rendered to the patients. This will also give an idea on the betterment and knowledge on the various different techniques that can be used for fabrication of single dentures. The aim of the study is to evaluate the number of maxillary edentulous patients undergoing single complete denture in Saveetha Dental college in the past one year.

3. MATERIAL AND METHODS:

This study was done in a university setting, patients visiting the out patient department in Saveetha Dental College. The pros being the data availability and similar ethnicity and the cons being that the data is not location specific. The data was reviewed from patient records and were collected from a particular time period which was June 2019 to March 2020. Cross verification of the data was done by photographs. Inclusion of all data was all done to minimize sampling bias. Internal validity present by excluding confounding factors. External validity results can be applied to practical situations.

Data collection and tabulation- Data collected was then tabulated and then exported to SPSS and the results were represented in the form of graphs and pie charts. Censored and incomplete data, patients were excluded from the study. The statistical study used was chi square test and the statistical analysis software was SPSS by IBM. Type of analysis used was correlation and association.

4. RESULTS:

A total of 43 cases of Maxillary single complete dentures were reviewed out of which 21 (51.2%) cases alone underwent treatment and 22 (48.8%) cases were advised for maxillary single complete dentures but did not undergo the treatment due to various reasons. (Figure 1). The most common age group that underwent maxillary single complete dentures were found to belong to the age groups of 44, 45 and 49 years (Figure 2). The gender most prevalent was female subjects with a percentage of 62.16% (Figure 3) Correlation graph between the age of the patient and the number of patients that underwent single complete dentures. (Figure 4) Correlation graph between the gender of the patient and the number of patients that underwent single complete dentures. (Figure 5)

5. DISCUSSION:

Teeth are required for mastication, phonetics, structural balance and for the comfort of an individual. With the loss of teeth, the above functions are impaired resulting in physical and physiological, psychological trauma to the individual. Further edentulism leads to a deep impact on the quality of life and on physiological and general health status of an individual. Loose teeth, edentulism or ill-fitting dentures may preclude eating favorite foods as well as limit intake of favorite foods. Poor oral health and loss of teeth not only affect dietary intake and nutrition status but also compromise general health of the patient. The foremost factors, age and tooth loss both have their variable effects on different age groups affecting the quality of life.

In addition, along with teeth, several other factors affect the oral health related quality-of-life, personal habit being the most important, which includes tobacco usage both in smoking and nonsmoking forms and also alcohol consumption. [6], [7]

Prosthetic rehabilitation is done to regain function, speech and esthetics. [8] Prosthetic camouflaging of facial defects and use of silicone maxillofacial material are the alternatives to the surgical retreatment. Silicone elastomers provide more options to clinicians for customization of the facial prosthesis which is simple, esthetically good when coupled with bio magnets for retention. [9]

Single complete denture (SCD) is a challenging clinical situation especially when the opposing natural dentition is not in a normal plane of occlusion. Mal-aligned, tilted or supra-erupted teeth in the opposing arch are some of the problems that should be corrected to achieve a balanced occlusion in patients who require SCD. Balanced occlusion is bilateral, simultaneous, anterior, and posterior occlusal contact of teeth in centric and eccentric positions (2005). It is developed to improve the stability of the dentures during all functional and/or parafunctional movements of the mandible. Lack of occlusal balance may cause a variety of denture related problems including instability, mucosal inflammation, soreness, bone resorption and ultimately leading to patient's dissatisfaction. Establishment of a normal occlusal plane in the opposite arch is a prerequisite for developing a balanced occlusion in SCD. An uneven occlusal plane is a common clinical situation in the natural dentition and it may occur due to one or more factors such as improper eruption, improper shape and position or attrition and abrasion of teeth. Achieving a normal occlusal plane is the

primary objective of any restorative procedure to facilitate natural mandibular movements and ease of mastication. [10]

A study done in Saveetha Dental College concluded that removable acrylic resin partial dentures tend to adversely affect periodontal parameters when teeth are in contact with resin base. This effect is increased with longer duration of RPD wear. Therefore, it is recommended to keep the dentures well relieved from the gingival margin wherever possible. [11].

Numerous researches were performed in the institution. Some of the published reports comprises studies done on ceramic crowns and materials, oral hygiene status among pregnant women, cephalosporins, aloe vera, cellulitis, retraction cord in gingiva. [12-23]

The most common age group found was 44-49 years of age. The results of the study are similar to a study done in the malwa region of India which showed that Female subjects, in urban populations with partial edentulous were more in the age group of 43 to 52 years of age. The same results were consistent for the gender predilection of this study which was found to be females more than males. The females had a frequency of 54.45%. [24]

The number of patients who underwent treatment were lesser in number compared to the number of patients who were diagnosed being edentulous. The frequency of patients who underwent the treatment were 51.2% and those diagnosed were 48.8%. [25]

Every study related to a single complete denture has its own challenges such as prolonged time for the fabrication of the denture, multiple visits to the dentist, cost of the denture etc. the limitations of the study include reduced sample size and limited geographic area. The future scope of the study is larger sample size with better scope.

6. CONCLUSION:

Within the limits of the study, the maxillary complete denture is most prevalent in female gender of the age group 44-49 years of age. The number of patients treated were less compared to the number of patients diagnosed with partial edentulous maxilla.

7. ACKNOWLEDGEMENT:

The authors would like to acknowledge the Chancellor, Director of Academics, The Principal, Associate Dean of Research, The Vice Chancellor of Saveetha University. HOD and their Professors, Readers, Lecturers and their fellow Postgraduates, Department of Prosthodontics and Department of Pedodontic and Preventive Dentistry, Saveetha University, The support from their parents and from their family.

8. AUTHORS CONTRIBUTIONS:

All the authors have contributed equally in writing the manuscript of this study.

9. CONFLICT OF INTEREST:

The authors would like to declare that there is no conflict of interest among the authors.

10. REFERENCES:

- [1.] Suominen-Taipale A-L, Alanen P, Helenius H, Nordblad A, Uutela A. Edentulism among Finnish adults of working age, 1978-1997. *Community Dentistry and Oral Epidemiology* 1999;27:353-65. <https://doi.org/10.1111/j.1600-0528.1999.tb02032.x>.
- [2.] Xie Q, Ainamo A. Association of edentulousness with systemic factors in elderly people living at home. *Community Dent Oral Epidemiol* 1999;27:202-9. Carless D, Douglas K. *Sport and Physical Activity for Mental Health*. John Wiley & Sons; 2011.
- [3.] Carlsson GE. Clinical morbidity and sequelae of treatment with complete dentures. *J Prosthet Dent* 1998;79:17-23.
- [4.] Davis DM, Fiske J, Scott B, Radford DR. The emotional effects of tooth loss: a preliminary quantitative study. *Br Dent J* 2000;188:503-6.
- [5.] Levin B, Landesman HM. A practical questionnaire for predicting denture success or failure. *J Prosthet Dent* 1976;35:124-30.
- [6.] Ashok V, Nallaswamy D, Benazir Begum S, Nesappan T. Lip Bumper Prosthesis for an Acromegaly Patient: A Clinical Report. *J Indian Prosthodont Soc* 2014;14:279-82. Venugopalan S, Ariga P, Aggarwal P, Viswanath A. Magnetically retained silicone facial prosthesis. *Niger J Clin Pract* 2014;17:260-4.
- [7.] Fontijn-Tekamp FA, Slagter AP, Van Der Bilt A, Van 'T Hof MA, Witter DJ, Kalk W, et al. Biting and Chewing in Overdentures, Full Dentures, and Natural Dentitions. *Journal of Dental Research* 2000;79:1519-24. <https://doi.org/10.1177/00220345000790071501>. Jyothi S, Robin PK, Ganapathy D, Others. Periodontal health status of three different groups wearing temporary partial denture. *Research Journal of Pharmacy and Technology* 2017;10:4339-42.
- [8.] Ganapathy D, Sathyamoorthy A, Ranganathan H, Murthykumar K. Effect of Resin Bonded Luting Agents Influencing Marginal Discrepancy in All Ceramic Complete Veneer Crowns. *J Clin Diagn Res* 2016;10:ZC67-70.
- [9.] Ajay R, Suma K, Ali S, Sivakumar JK, Rakshagan V, Devaki V, et al. Effect of surface modifications on the retention of cement-retained implant crowns under fatigue loads: An In vitro study. *Journal of Pharmacy And Bioallied Sciences* 2017;9:154. https://doi.org/10.4103/jpbs.jpbs_146_17.
- [10.] Ranganathan H, Ganapathy DM, Jain AR. Cervical and Incisal Marginal Discrepancy in Ceramic Laminate Veneering Materials: A SEM Analysis. *Contemp Clin Dent* 2017;8:272-8.
- [11.] Basha FYS, Ganapathy D, Venugopalan S. Oral Hygiene Status among Pregnant Women. *Research Journal of Pharmacy and Technology* 2018;11:3099-102.
- [12.] Selvan SR, Ganapathy D. Efficacy of fifth generation cephalosporins against methicillin-resistant *Staphylococcus aureus*-A review. *Research Journal of Pharmacy*

- and Technology 2016;9:1815–8.
- [13.] Subasree S, Murthykumar K, Others. Effect of Aloe Vera in Oral Health-A Review. Research Journal of Pharmacy and Technology 2016;9:609–12.
- [14.] Vijayalakshmi B, Ganapathy D. Medical management of cellulitis. Research Journal of Pharmacy and Technology 2016;9:2067–70.
- [15.] Ashok V, Suvitha S. Awareness of all ceramic restoration in rural population. J Pharm Res 2016.
- [16.] Jain AR, Nallaswamy D, Ariga P, Ganapathy DM. Determination of correlation of width of maxillary anterior teeth using extraoral and intraoral factors in Indian population: A systematic review. World J Dent 2018;9:68–75.
- [17.] Duraisamy R, Krishnan CS, Ramasubramanian H, Sampathkumar J, Mariappan S, Navarasampatti Sivaprakasam A. Compatibility of Nonoriginal Abutments With Implants: Evaluation of Microgap at the Implant-Abutment Interface, With Original and Nonoriginal Abutments. Implant Dent 2019;28:289–95.
- [18.] Kannan A, Others. Effect of Coated Surfaces influencing Screw Loosening in Implants: A Systematic Review and Meta-analysis. WORLD 2017;8:496–502.
- [19.] Kannan A, Venugopalan S. A systematic review on the effect of use of impregnated retraction cords on gingiva. Research Journal of Pharmacy and Technology 2018;11:2121–6.
- [20.] Agrawal R, Shakya P, Jain D, Sonkesariya S, Prasad SVS. Prevalence of Dentulism, Partial Edentulism and Complete Edentulism in Rural and Urban Population of Malwa Region of India: A Population-based Study. International Journal of Prosthodontics and Restorative Dentistry 2014;4:112–9. <https://doi.org/10.5005/jp-journals-10019-1117>.
- [21.] Chee W, Jivraj S. Treatment planning of the edentulous mandible. Br Dent J 2006;201:337–47.

FIGURE LEGENDS:

Figure 1: Represents the number of patients who reported with single arch edentulousness and the number of patients underwent treatment and those did not undergo treatment.

Figure 2: Graph representing the number of cases of single complete denture based on age.

Figure 3: Graph represents the number of cases of single complete denture based on gender.

Figure 4: Association graph between the age of the patient and the number of patients whom underwent single complete dentures.

Figure 5: Association graph between the gender of the patient and the number of patients whom underwent single complete dentures.

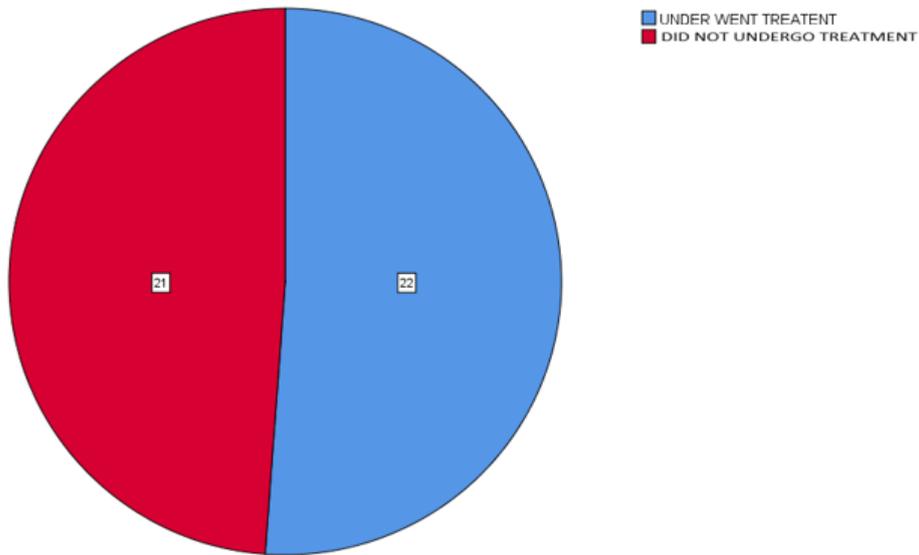


Figure 1: Represents the number of patients who reported with single arch edentulousness and the number of patients that underwent treatment versus those who did not undergo treatment. The number of patients who underwent treatment of single complete denture were 22 (51.2%) shown as blue in the pie chart and those who did not undergo treatment were 21 (48.8%) shown as red in the pie chart.

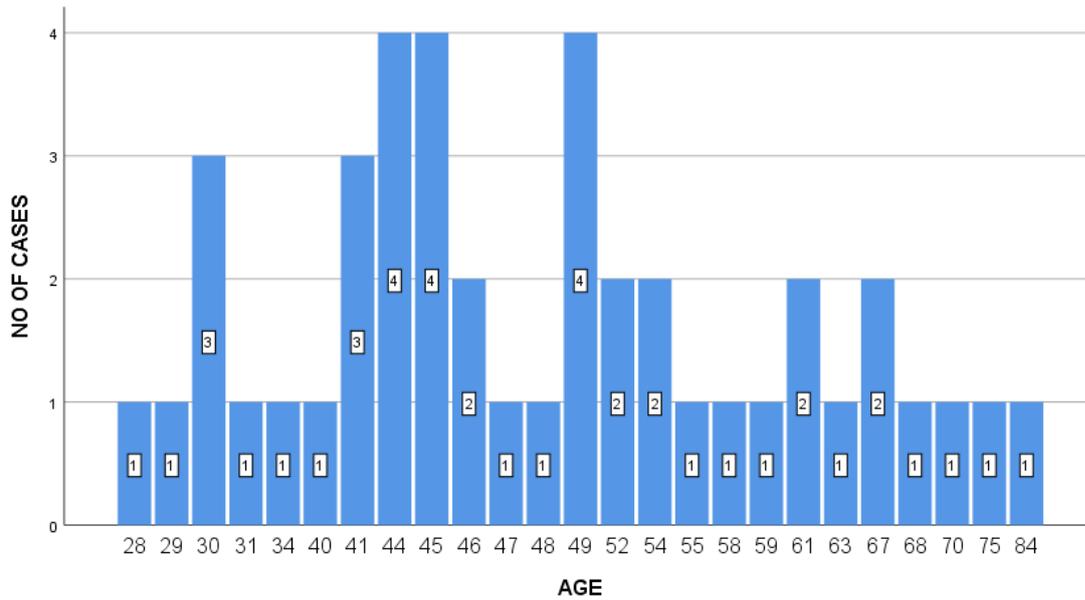


Figure 2: Graph representing the number of cases of single complete denture based on age. The x axis of the graph represented the age of the patients and the Y axis represents the number of patients studied. The most prevalent age found from the study was found to be 44, 45 and 49 years of age, followed by 30 and 41.

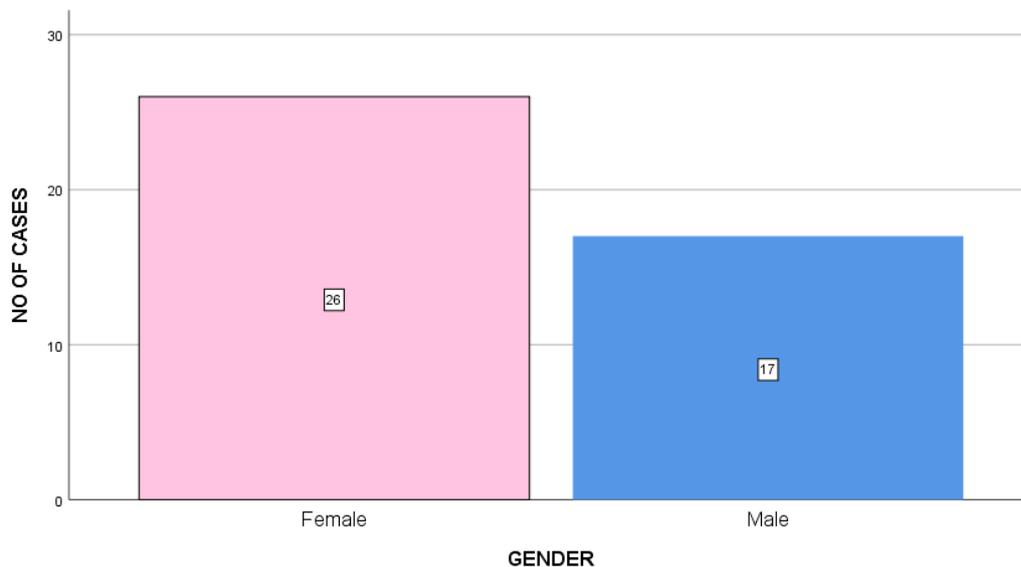


Figure 3: Graph represents the number of cases of single complete denture based on gender. The x axis of the graph represents the gender of the patient and the Y axis represents the

number of patients. The most common gender found to be prevalent was females shown in pink in the graph. The percentage of female predilection was 62.16%.

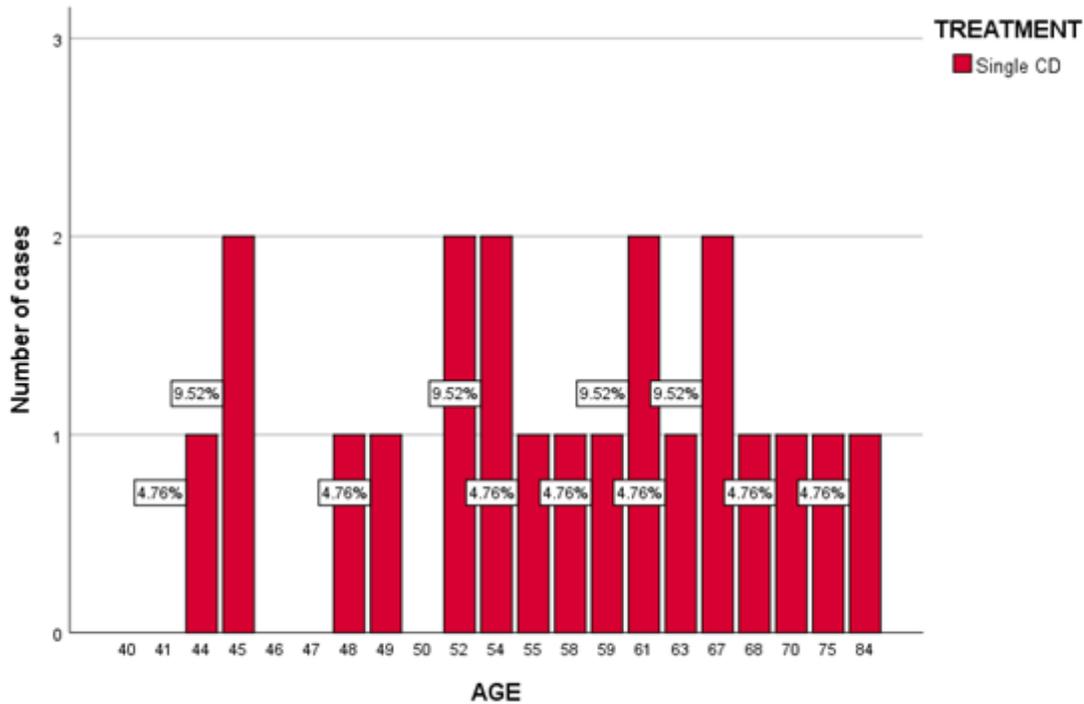


Figure 4: Bar graph shows the association between the different age groups of patients and the total number of patients who underwent single complete denture treatment. X axis represents the age of the patients and Y axis represents the number of patients who had single complete denture. Chi square test was done and association was found to be statistically significant. Pearson's chi squared test value 26.814 Df: 20, p value:0.141 <0.5 Hence statistically significant. The graph infers that single complete denture treatment was more prevalent among the age group of 45, 52, 61, 67 yrs than other age groups

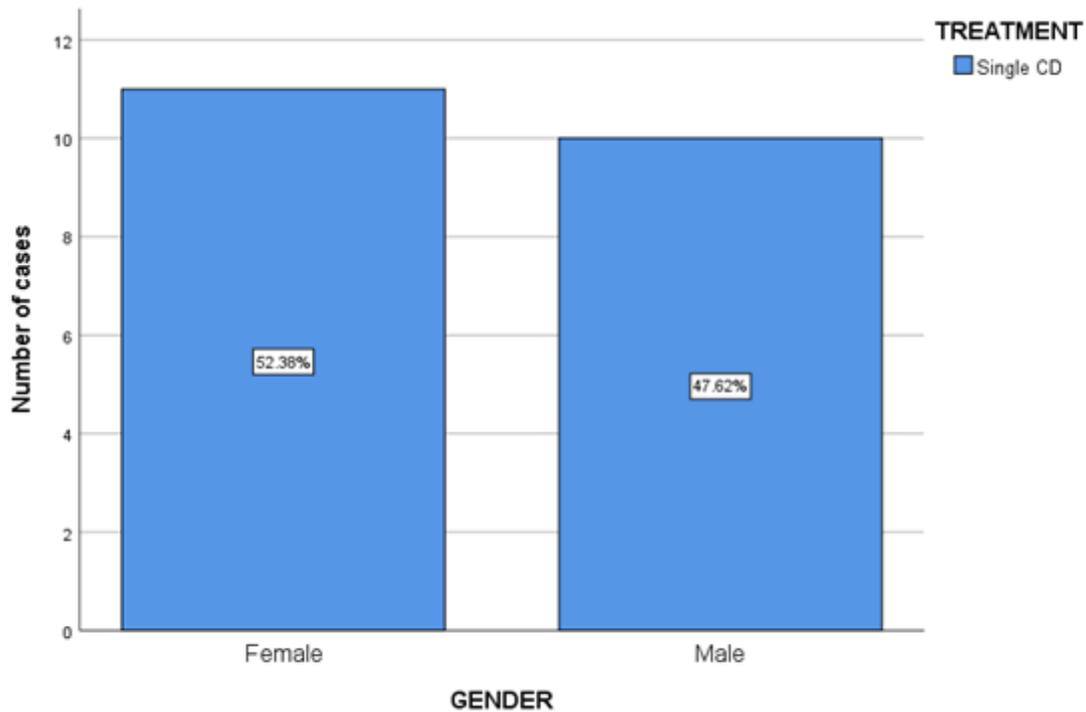


Figure 5: Bar graph shows the association between the gender of patients and the number of patients who had single complete denture. X axis represents the gender of the patients and Y axis represents the number of patients who had single complete denture. Chi square test was done and association was found to be statistically significant. Pearson's chi squared test value 1.975 Df: 1, p value:0.160 <0.5 Hence statistically significant. The graph infers that female study participants underwent more number of single complete dentures than male participants.