

AWARENESS ON THE ADVANTAGES OF USING SEMI ADJUSTABLE ARTICULATOR AMONG UNDERGRADUATE DENTAL STUDENTS

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ABSTRACT:

A survey was conducted in Saveetha dental college among undergraduate students. This study aims to assist with understanding the procedure of mounting models in a semi adjustable articulator which takes place most often in dental laboratory following on from a facebow recording and intra-occlusal records being made. The bite fork will be carefully removed from any packing and a check will be made that the maxillary model to be mounted into the articulator sits in bite registration material in a stable manner. Most commonly semi-adjustable articulator sits in the condylar guidance angle and Bennett angle that can be adjusted. A cross section survey was initiated in the students of saveetha dental college, Tamil Nadu about the advantages of using semi adjustable articulators. Nearly 100 people responded that the survey data has been collected and plotted as a graph. Data has been collected with the help of SPSS software and data has been analysed. 100 people responded to the survey only limited people option has been collected. In our survey we found that the UG students are having moderate knowledge on advantages of using semi adjustable articulators.

Keywords: Articulator; Advantages; Bennett angle

INTRODUCTION

An articulator is a mechanical instrument that represents the temporomandibular joints (TMJ) and jaws, to which maxillary and mandibular casts may be attached to simulate some or all mandibular movements (Morgano *et al.*, 2018). Articulators help in diagnosis and treatment planning by studying the teeth and dental arches. An articulator is used in different branches of dentistry by assisting in processing of fixed and removable appliances (Starcke, 2000a) (Ariga *et al.*, 2018). In history of articulators, the articulators were introduced by Phillip Pfaff with Plaster Articulator in 1756 (Starcke, 2000b). Later Barn Door Hinge, articulator with a heavy-duty hinge was introduced followed by Kerr articulator with fixed protrusive and lateral movement (Heartwell and Rahn, 1986) (Finger and Tanaka, 1977). In 1921 Rudolph L. Hanau introduced the Hanau Model C, later in 1923 Hanau model M Kinoscope Articulator came with a double condylar post having varying rotation centers (Sharry, 1974). Joseph Homer introduced an articulator with plastic guides to preserve the position of the articulator called the Homer Realtor (Irish,

1965). In 1922 and 1923, the Hanau Model H110 articulator was introduced for the dental profession to overcome the more sophisticated kinesiograph instrument (Murray and Darvell, 1993). The accuracy of the articulator is determined as how exactly it accepts the facebow transfer of maxillary cast on to the articulator and simulates occlusal plane (OP) to the opening axis of articulator in a similar position as it is in the patient's Skull. Semi Adjustable articulators are those which are adjustable to individual static records (Thomas, 1973) (Jyothiet al., 2017). These articulators may be of the archon or condylar type (Bersch and Bersch, 1950). The archon type of articulator produces a more constant condylar path as the guides remain constant to the movement of the upper member (Beck, 1962) (Villa and Honorato Villa, 1959). This type of arrangement is advocated when constructing an articulator. Ideally a semi adjustable articulator should stimulate mandibular movements in three planes in order to develop occlusal morphology of restoration that permit the passage of opposing cusps without interfering with mandibular movements (Starcke, 2019). Anatomical determinants recorded by interocclusal cheek records are transferred to semi adjustable instruments to program the mechanical components that control the movements and influence the occlusal morphology of restorations (Abdullah, 1995) (Basha, Ganapathy and Venugopalan, 2018). The greater accuracy in reproducing mandibular movements, the less will be the occlusal correction required when restoration are seated in mouth (Hobo, Shillingburg and Whitsett, 1976). Semi adjustable articulators are commonly used for fabrication of occlusal surfaces of crowns, fixed partial dentures, implant prostheses and conventional complete and removable partial dentures during diagnoses and treatment planning (Duraismy et al., 2019) (Ganapathy, 2016). Semi adjustable articulator is used increasingly in modern dentistry. Many articles were referred in some of the articles says about the classification and the uses of articulators (Ganapathy, Kannan and Venugopalan, 2017). The classification are a Gillis, Beck, Posselt classification, Sharry classification, Heartwell and Rain classification, Thomas attempted to simplify the classification of articulators. Based on classification of articulators using the new system, A semi adjustable articulator can accept all three of those records, Snow scene, 1910 (Ashok et al., 2014); Gysi Adaptable 1910 (does not accept lateral records); Hanau H, 1922, Wadsworth 1924; Gysi tribyte, 1926 (does not accept the intercondylar distance record, Satisfies Bonwill principles); Dentatus, 1944; Berystrom Arcon, 1950; Hanau 130-28, 1963 and Whip-mix, 1968 (Još, 2008) (Jain, Ranganathan and Ganapathy, 2017). The uses of articulator in prosthodontics is they are essential in planning fixed prosthodontic treatment, To diagnose the state of occlusion in both the natural and artificial dentition (Selvan and Ganapathy, 2016), To plan dental procedures based on the relationship between opposing natural and artificial teeth (Ajay et al., 2017), example-evaluation of possibility of balanced occlusion, to correct and modify restoration, To arrange artificial teeth ('2008 Miracle Yearbook', 2008). The aim is to find the advantages of using semi adjustable articulators among ug students.

MATERIALS AND METHODS

Across section survey was initiated among students in saveetha dental college, tamilnadu about the advantages of semi adjustable articulators among UG dental students. The study sample size of approximately 100. The sample technique used was convenience sampling. After obtaining ethical clearance, permission to conduct a survey was obtained from the university. To maintain liable privacy of act, we ensured not to get information on names or contact information. This study was conducted with all UG students in the university, to get anversitail result. A pre tested, self administered questionnaire was used as the study instrument, it was developed from the help of pre published literature.

The statistical analysis was performed using the SPSS software. The independent t test was performed to compare the variables. The data collection is done in google forms, the collected data has been uploaded into MS excel sheets or google sheets and the responses are converted into scoring. A p value of <0.05 was considered as statistically significant. A chi square test is done to estimate the mean p value. (p)=0.01- p<0.05

Inclusion criteria

Only dental students participated in this survey because they were aware about the advantages of semi adjustable articulators.

Exclusion criteria

People other than dental students were not considered.

RESULT AND DISCUSSION

In the study, 52% of the responded study population are male, and 48% are female. 100 students participated in this survey data has been collected with the help of SPSS software data has been analysed and plotted as graphical representation. Figure:1-represents the advantages of semi adjustable articulators, 66% of the population opted for adequate for more cases and 8% as less costly and 26% as both adequate for more cases and less costly. In similar article they mentioned advantages of mounting in semi adjustable articulators. (Tanaka, Finger and Porter, 1975). Figure:2-represents which type of articulators are you using, 81% of articulators are you using, 81% of population opted as semi adjustable articulator and 11% opted as non adjustable articulator and 8% as fully adjustable, A similar review article discussed the types of articulators. (Hanau, 1930) (Subasree, Murthykumar and Dhanraj, 2016). Figure:3-represents which brand you are using, 96% of the population opted as bioart and 4% as other brands. Figure:4-represents difference between nonadjustable and semi adjustable articulator, 65% of population opted for protrusive angle can be changed and 23% as separable and 12% as none of the above, In a similar article they discussed about difference between non adjustable and semi adjustable articulators. (Vijayalakshmi and Ganapathy, 2016) (Venugopalan *et al.*, 2014). Figure:5-represents the uses of articulators, 12% of the population opted for to correct and 16% for to arrange and 32% for to correct and 16% for to arrange and 32% for to plan and 40% for all the above. Figure:6-Pie chart represents how many types of articulators are there, 5% of the population opted for one type and 54% for two types and 38% for three types and 3% for four types. Figure:7-represents how many types of semi adjustable articulators, 3% of the population opted for one type and 76% as two types and 26% for three types and 1% as four types, (Ashok and Suvitha, 2016) In a similar review article they discussed the types of semi adjustable articulators. Figure:8- represents the do you know the uses of face bow, 87% of the population opted for yes and 13% as No. Figure:9- represents the uses of face bow, 3% of population opted for balanced occlusion in CD and 10% as balanced occlusion in FFD and 73% as recording and transfer of jawational records, In a similar article they discussed the uses of face bow (Hatzl, Millstein and Maya, 2001) (Kannan and Venugopalan, 2018). Figure:10-represents the record needed for mounting on semi adjustable articulators, 6% of population opted as centric relation and 15% as facebow record and 5% as eccentric relation and 74% as all the above. Figure:11-Pie chart represents the understanding of the potential of a semi adjustable articulator, 99% of the population opted as yes and 1% as no.

Limited number of populations, some inappropriate responses can be the limitations of the study. In future there is a need to consider other university students also to get more appropriate results.

CONCLUSION

From the study we can conclude that over 80% of UG students are well aware about the advantages of using semi adjustable articulators.

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CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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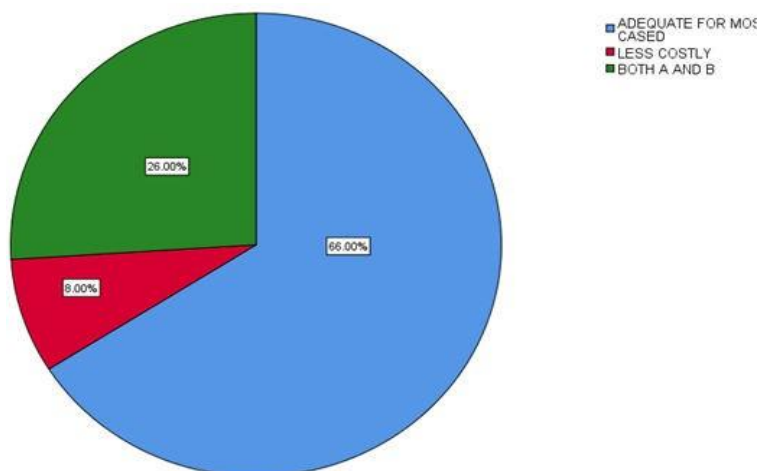


Figure:1- Pie chart represents the advantages of semi adjustable articulators, 66%(Blue) of the population opted for adequate for more cases and 8%(red) as less costly and 26%(green) as both adequate for more cases and less costly. Majority of respondents reported for adequate for more cases.

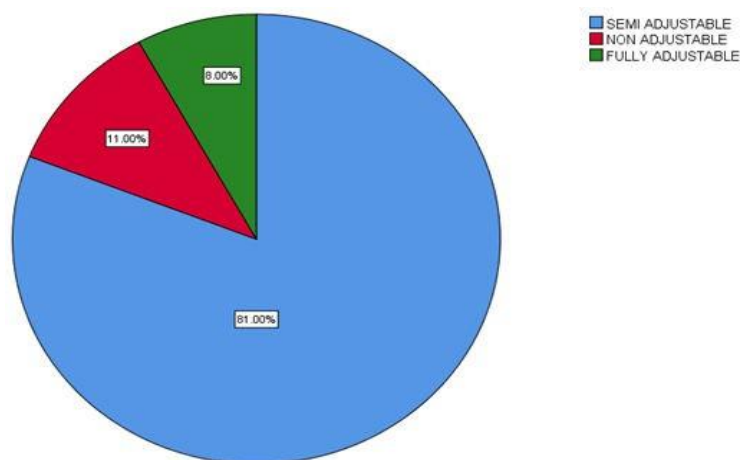


Figure:2- Pie chart represents which type of articulators are you using, 81%(blue) of population opted as semi adjustable articulator and 11%(red) opted as non adjustable articulator and 8%(green) as fully adjustable. Majority of respondents reported for semi adjustable.

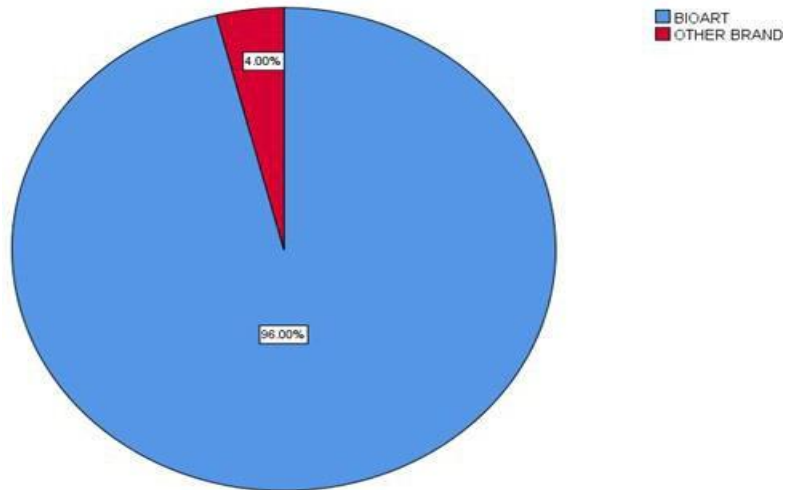


Figure:3-Pie chart represents which brand you are using, 96%(blue) of the population opted for bioart and 4%(red) as other brands.Majority of respondents reported for Bioart.

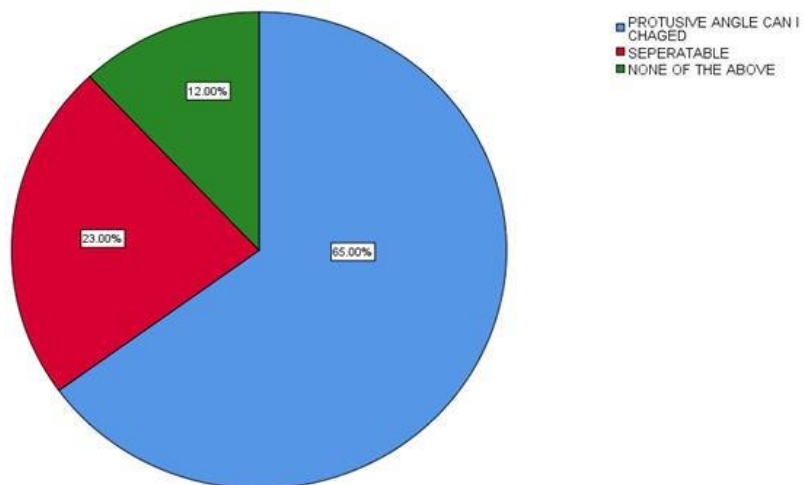


Figure:4-Pie chart represents difference between non adjustable and semi adjustable articulator,65%(blue) of population opted for protrusive angle can be changed and 23%(red) as separable and 12%(green) as none of the above. Majority of respondents reported for protrusive angle can be changed.

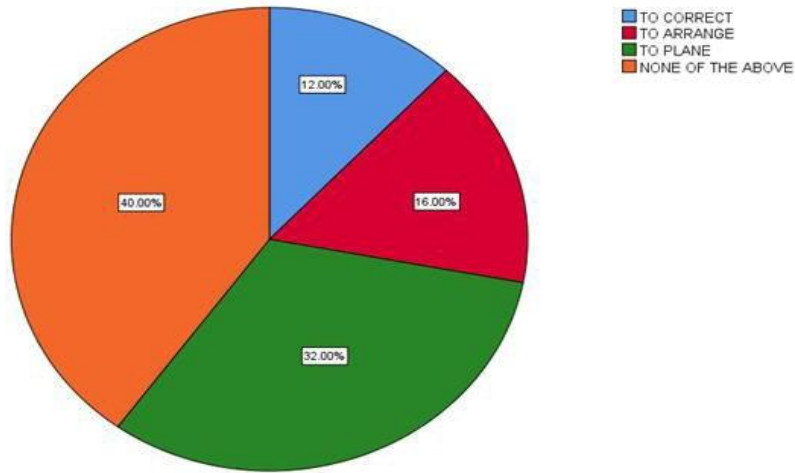


Figure:5-Pie chart represents the uses of articulators,12%(blue) of the population opted for to correct and 16%(red) for to arrange and 32%(green) for to correct and 40% for all the above.Majority of respondents reported for to arrange.

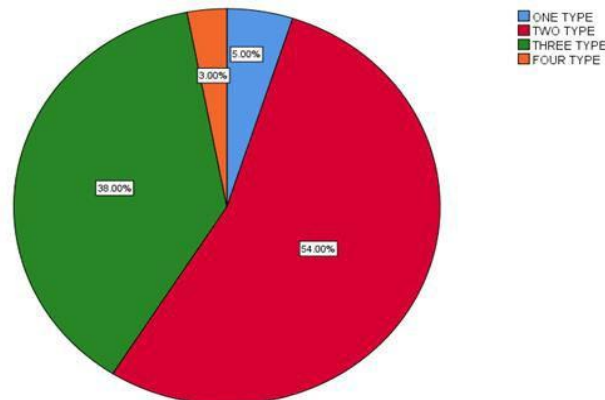


Figure:6-Pie chart represents how many types of articulators are there,5%(blue) of the population opted for one type and 54%(red) for two types and 38%(green) for three types and 3%(orange) for four types.Majority of respondents reported for two types.

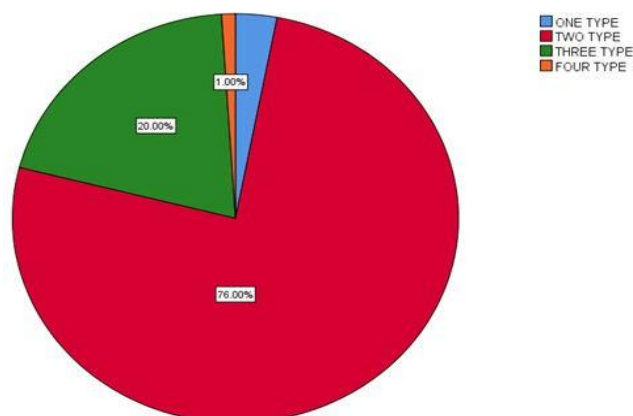


Figure:7-Pie chart represents how many types of semi adjustable articulators,2%(blue) of the population opted for one type and 76%(red) as two types and 20%(green) for three types and 1%(orange) as four types.Majority of respondents reported for two types.

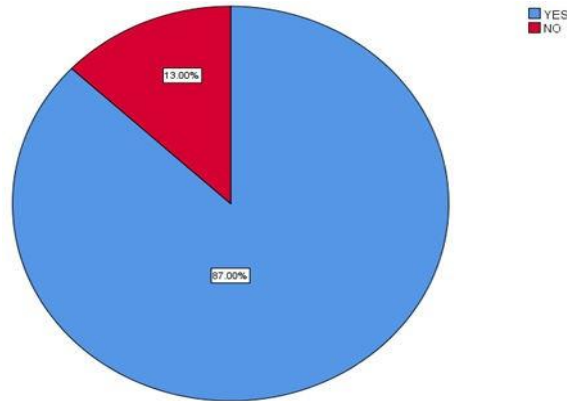


Figure:8-Pie chart represents the do you know the uses of face bow,87%(blue) of the population opted for yes and 13%(red) as No.Majority of respondents reported for yes.

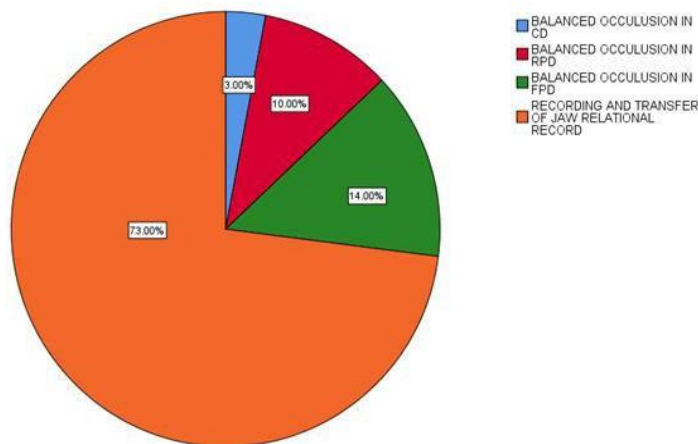


Figure:9-Pie chart represents the uses of face bow,3%(blue) of population opted for balanced occlusion in CD and 10%(red) as balanced occlusion in RPD and 73%(orange) as recording and transfer of jawational records and 14%(green) as balanced occlusion in FPD.Majority of respondents reported for recording and transfer of jaw relation record.

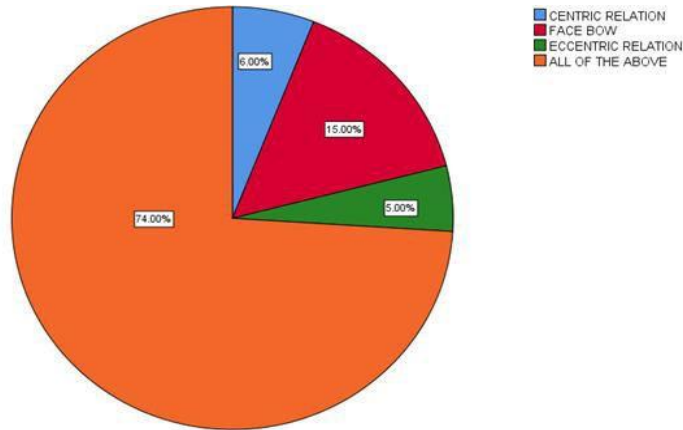


Figure:10-Pie chart represents the record needed for mounting on semi adjustable articulators,6%(blue)of population opted as centric relation and 15%(red) as facebow record and 5%(green) as eccentric relation and 74%(orange) as all the above.Majority of respondents reported for all the above.

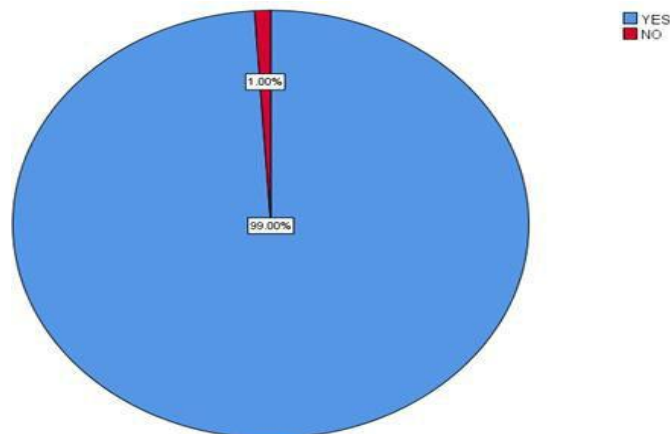


Figure:11-Pie chart represents the understanding of the potential of a semi adjustable articulator,99%(blue) of the population opted as yes and 1%(red) as no.Majority of respondents reported for yes.

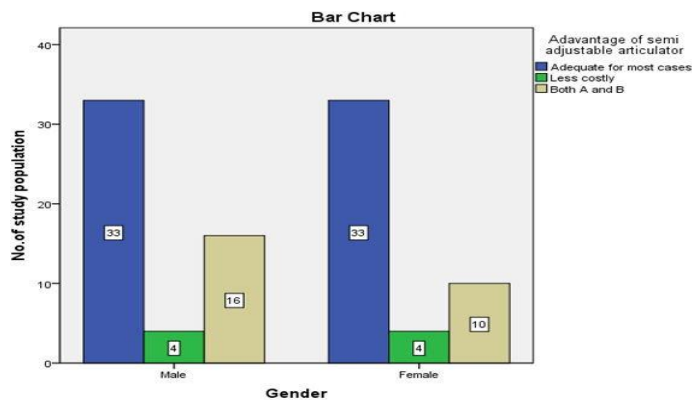


Figure:12-Bar graph represents the association between Gender and advantages of semi adjustable articulators. X axis denotes gender and Y axis denotes number of study population. Blue colour denotes adequate number of cases, green colour denotes less costly and sandal colour denotes both a and b. Majority of males (16%) were more aware about the advantages of semi adjustable articulators than females. There is no significant difference in responses between males and females. Pearson's Chi square test shows p value is 0.598(>0.05). Hence it is not statistically significant.

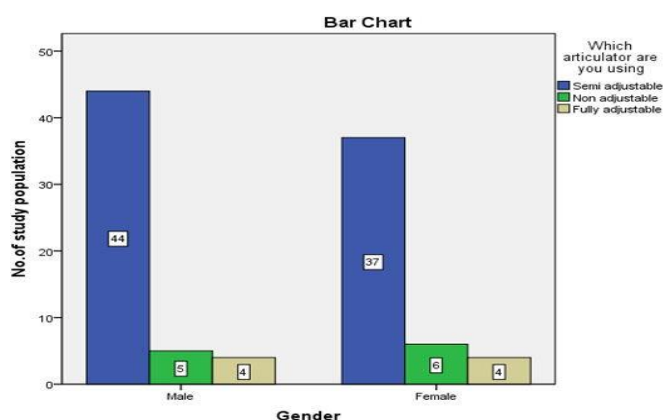


Figure:13-Bar graph represents the association between Gender and type of articulators are you using. X axis denotes gender and Y axis denotes number of responses. Blue colour denotes semi adjustable, green colour denotes non adjustable and sandal colour denotes fully adjustable. Majority of males (44%) were more aware on using semi adjustable articulators than females. There is no significant difference in responses between males and females. Pearson's Chi square test shows p value is 0.845(>0.05). Hence it is not statistically significant.

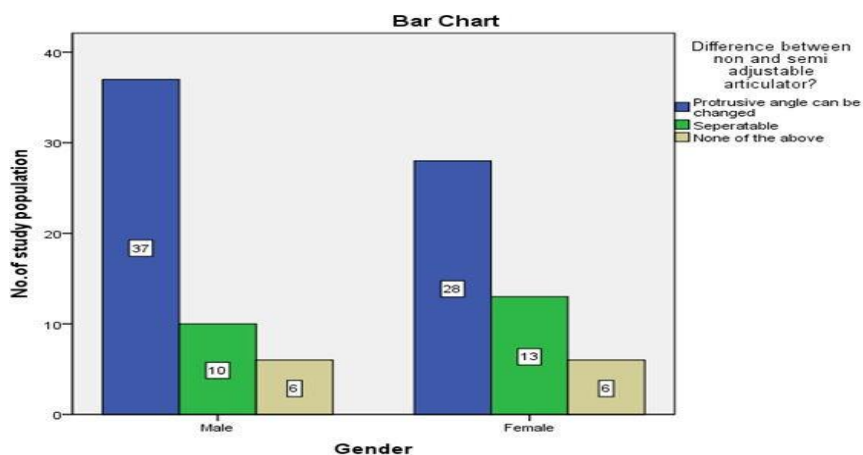


Figure:14-Bar graph represents the association between Gender and Difference between non adjustable and semi adjustable articulators. X axis denotes gender and Y axis denotes number of responses. Blue denotes protrusive angle can be changed, green denotes separable and sandal shows none of the

above. Majority of males (37%) were more aware about the difference between semi adjustable and non adjustable articulators than females. There is no significant difference in responses between males and females. Pearson's Chi square test shows p value is 0.845 (>0.05). Hence it is not statistically significant.

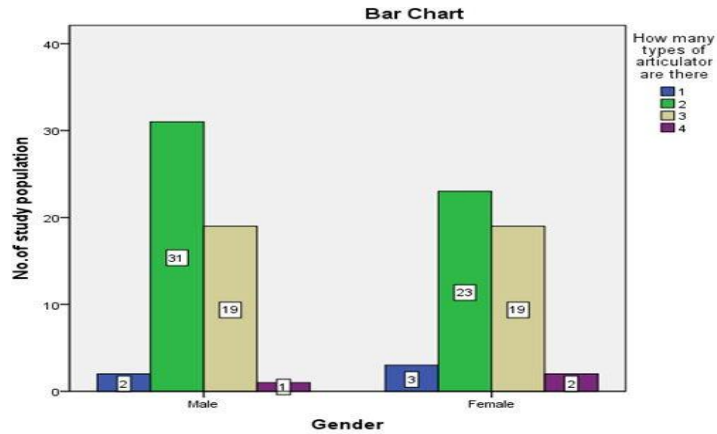


Figure:15-Bar graph represents the association between Gender and how many types of semi adjustable articulators. X axis denotes gender and Y axis denotes number of responses. Blue denotes one, green denotes two, sandal denotes three and violet denotes four. Both males and females (19%) were equally aware about the types of articulators. There is no significant difference in responses between males and females. Pearson's Chi square test shows p value is 0.610 (>0.05). Hence it is not statistically significant.

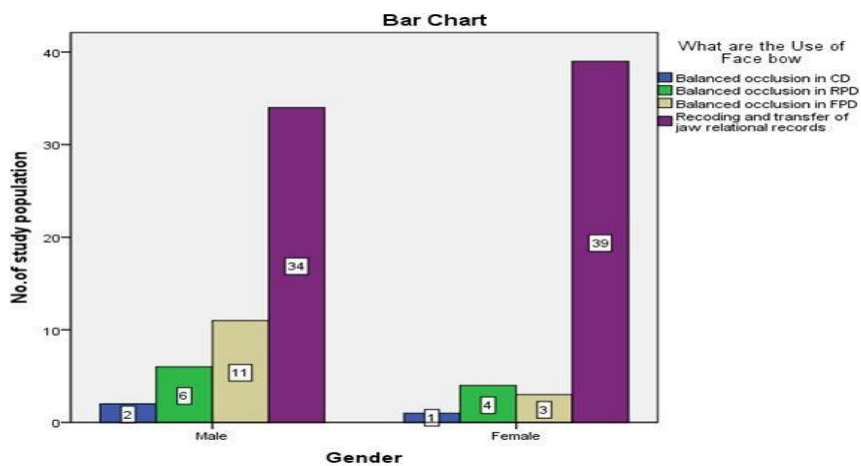


Figure:16-Bar graph represents the association between Gender and uses of facebow. X axis denotes gender and Y axis denotes number of responses. Blue denotes balanced occlusion in CD, green denotes balanced occlusion in RPD, sandal denotes balanced occlusion in FPD and violet denotes recording and transfer of jaw relation records. Majority of females (39%) are more aware about the uses of facebow than males. There is no significant difference in responses between males and females. Pearson's Chi square test shows p value is 0.151 (>0.05). Hence it is not statistically significant.

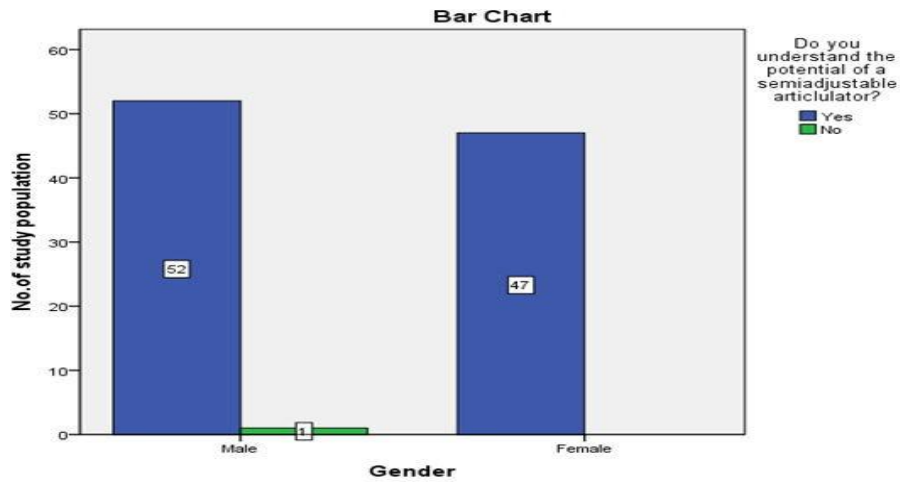


Figure:17-Bar graph represents the association between Gender and understanding the potential of semi adjustable articulators. X axis denotes gender and Y axis denotes number of responses.Blue denotes yes and green denotes no. Majority of males(52%) are more aware about the potential of semi adjustable articulators than females.There is no significant difference in responses between males and females.Pearson's Chi square test shows p value is 0.344(>0.05). Hence it is not statistically significant.