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### A QUESTIONNAIRE BASED SURVEY AMONG UNDERGRADUATE STUDENTS ON PERCEPTION OF SUPRAERUPTION OF MOLARS WITHOUT ANTAGONIST AND ATTITUDE TO PROSTHETIC INTERVENTION

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**A.S.Pavithra, Venkatesh Kommi, A.K Anjali. A QUESTIONNAIRE BASED SURVEY AMONG UNDERGRADUATE STUDENTS ON PERCEPTION OF SUPRAERUPTION OF MOLARS WITHOUT ANTAGONIST AND ATTITUDE TO PROSTHETIC INTERVENTION-- PalArch's Journal Of Archaeology Of Egypt/Egyptology 17(7), 3348-3359. ISSN 1567-214x**

**Keywords: Molars, supraeruption, Prosthetic Intervention, Questionnaire study.**

#### **ABSTRACT:**

As supra eruption is more commonly seen in dentistry. May be due to edentulous space or malocclusion of teeth. This questionnaire study aimed to survey undergraduate students' perceptions of risks for the supraeruption of unerupted molars without any antagonists and attitudes to prosthetic intervention. A clinical situation with a 30-year-old male patient who just had lost the left mandibular molars was presented. A series of questions was provided regarding what would most probably occur with the unerupted mandibular molars within 10 years, what treatment to propose, and indications for the proposed treatment. The questionnaire was sent through what's app as a google form format. The majority assumed the molars would supra-erupt within 10 years. 33% of respondents received prosthodontic care. By contrast, an alternative "wait-and-see" was selected by only 35 percent. The most commonly suggested treatment indications were the risk of TMD (32%), followed by impaired and supra eruption (18%). To date, most undergraduates seem to believe that molar supraeruption would occur after antagonist extraction and that prosthetic interventions are needed to prevent possible clinical problems.

## **INTRODUCTION:**

Supraeruption is the physiological movement in the dental occlusion of a tooth that lacks an opposing partner. There is a tendency for the tooth to erupt out of the occlusion line, due to the lack of opposing force and the natural eruptive potential of the tooth. There is a tendency for the tooth to erupt out of the occlusion line, due to the lack of opposing force and the natural eruptive potential of the tooth. Not all teeth lacking an opposing tooth supra erupted, even in the long run. Unopposed upper jaw molars supra-erupt more than the unopposed lower jaw molars. It is more severe in young people and people with periodontic effects. Migration of a tooth beyond the occlusal plane without antagonists or occlusal contacts is widely believed among dentists (Ariga *et al.*, 2018). Many dental textbooks typically see the definition of "tooth supraeruption without antagonists (Jyothi *et al.*, 2017)." Typically, the textbooks refer to supraeruption as a "simple clinical observation" or "frequently push unopposed teeth into edentulous space" (Duraismy *et al.*, 2019). Though a small amount of evidence has been reported in early studies, it's controversial (Selvan and Ganapathy, 2016). A study using a questionnaire to dentists reported that in only 34 percent of 536 patients supraeruption of teeth without antagonists was observed for 5 years or longer (Ganapathy *et al.*, 2016). A dental cast observational study found that all unopposed teeth had moved beyond the occlusal plane (Subasree, Murthykumar, and Dhanraj, 2016). On the other hand, many retrospective studies have been reported more recently, and their results agree with the supraeruption of unopposed molar teeth (Ranganathan, Ganapathy, and Jain, 2017). Two retrospective studies without a control group found excessive eruption in about 80 percent of later teeth without antagonists (Vijayalakshmi and Ganapathy, 2016). A demonstrated analysis found that the mean deviation of the unopposed posterior tooth from a Broadrick curve was significantly greater in control subjects than those for opposite molar tooth, suggesting an supraeruption of an unopposed molar tooth (Ganapathy, Kannan, and Venugopalan, 2017). A study in young adults found an supraeruption of lower second mandibular molar without upper second molar when compared to the control subjects (Ashok and Suvitha, 2016). A recent review has concluded that supraeruption without an antagonist is inevitable to occur. (Ashok *et al.*, 2014). The traditional clinical concept that prosthetic treatment in the edentulous area must be made immediately after the extraction of the molar tooth to prevent the supraeruption and development of TMD has been taught in dental schools (Venugopalan *et al.*, 2014). This study shows its value to survey the current attitudes of undergraduate perceptions of supraeruption without antagonists, and attitude on prosthetic intervention (Kannan and Venugopalan, 2018).

## **MATERIALS AND METHOD**

### **Research approach and design**

A descriptive cross-sectional survey was conducted using the electronic distribution of a questionnaire using Google Forms for the data collection. There were about 10 questionnaires which include a case study where A 30-year-old male patient lost lower left mandibular molar last week because of the vertical fracture of both crown and root. Then followed by sub-questions. The questionnaires were framed and checked using a questionnaire checking tool and approach by the guide and higher authorities. The questionnaires were

typed in google forms and shared using Whatsapp to the specific community which includes undergraduate dental students. As the electronic approach is the best way to approach a large number of community peoples for data collection as well as suitable in present conditions where people have to avoid gathering, close contact, etc. for prevention of COVID-19.

**Population, Sample, and sampling :**

A **total** of about 100 participants were selected for the survey. The participants were undergraduate dental students. The participants were asked to fill the Google forms and the data was collected in an excel sheet. The questions were simple and understandable multiple-choice questions

**Data analyses:**

The gathered data was analyzed using SPSS software. Chi-square test was used and Pearson correlation analysis was used to assess the correlation between the variables. The results were considered to be statistically significant if  $p < 0.05$ .

**RESULTS AND DISCUSSION:**

31.1% of the participants were 19 years old, 17.5% of the participants were 20 years old, 9.7% of participants were 21 years old 12.6% participants were 22 years old, 20.4% of participants were 23 years old, 4.9% of participants were 24 years old, 3.9% participants were 25 years old (Figure 1).

58.3% of participants were female while 41.7% of participants were male (Figure 2).

4.9% of participants were the first year, 31.1% of participants were the second year, 23.3% of people were the third year, 11.7% of participants were the fourth year, 29.1% of participants were an intern (Figure 3).

59.5% of the participants say that they are aware of supraeruption, 21.4% of participants say that they are not aware of supraeruption, 28.2% of participants say that they don't know supraeruption (Figure 4).

Based on a case study “A 30-year-old male patient lost lower left mandibular molar last week because of vertical fracture of both crown and root.what will probably occur after 10 years” .17.5% of participants don't know what to do. While 82.5% of participants say supraeruption occurs (Figure 5).

33% of participants suggested performing the prosthodontic procedure, 34.95% of participants suggest giving some time, 35% of participants suggest giving some time, 27.2% suggest not to do anything, 5% of participants don't know (Figure 6).

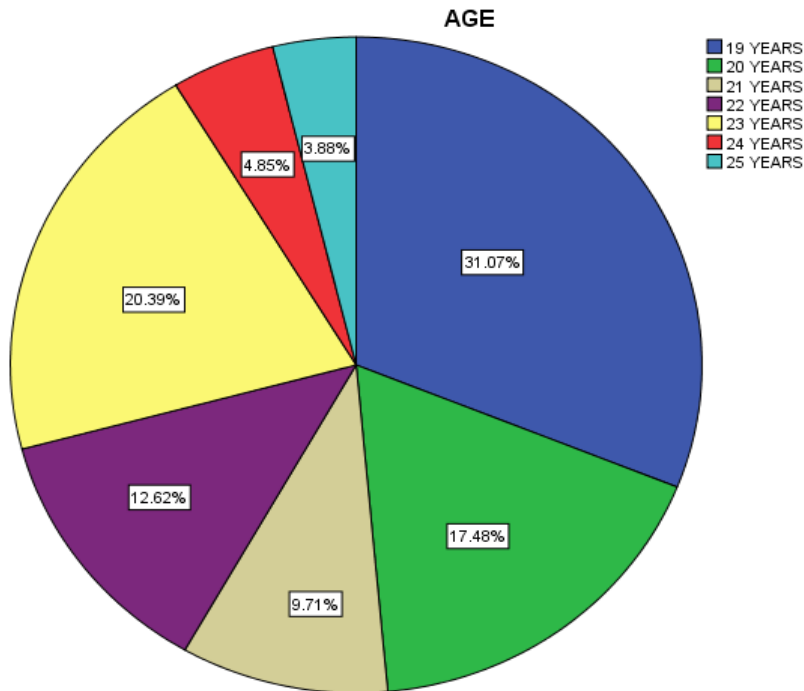
31.1% participants suggested to replace the edentulous space as soon as possible, 29% of participants suggest to replace the edentulous space within 6 months.37.9% participants suggest to replace the edentulous space within 1 year, 1.9% participants suggest to replace the edentulous space within 5 years (Figure 7).

The association between gender and knowledge about supraeruption . There is no significant difference, (p-value<0.05) (Figure 8).

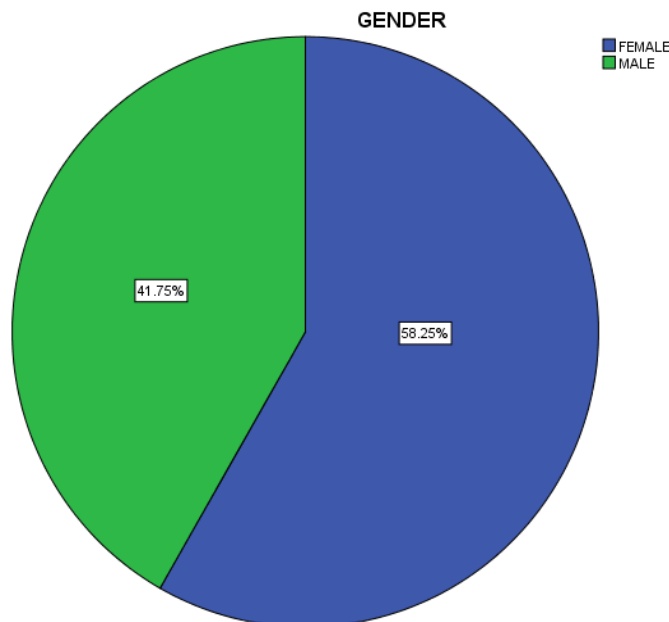
The association between gender and suggestion for replacing the edentulous space. There is no significant difference (p-value<0.05) (Figure 9). Figure 10 shows the association between gender and period of duration to replace edentulous space. There is significant increase (p-value= 0.05) (Figure 10). Figure 11 shows the association between gender and risk of supraeruption. There is no significant difference (p-value<0.05) (Figure 11).

This study presented the same clinical situation and used the same questionnaire used in the Swedish study (Basha, Ganapathy, and Venugopalan, 2018). Northwestern Europe has known the SDA concept for the last two decades. The applicants for the current study were chosen as non-specialists from private practitioners in Nagano and Niigata Prefectures and hospital dentists, as well as prosthodontics specialists, to obtain a range of views. In this type of study, the response rate is the most critical issue (Ajay *et al.*, 2017). As an anonymous architecture has been employed for ethical purposes in the current report, it has made it difficult to send reminders to non-respondents (Widek *et al.*, 2019). In the current study, the response rate (67.2 percent) is close to that in the Swedish study (72.5 percent) (21) and the other survey studies (64-67 percent) (I and Ashraf, 2019). Many retrospective studies have been published recently, and the results agree with the view that supraeruption would occur in the clinical situation presented (Kiliaridis *et al.*, 2000). They concluded that the loss of subsequent occlusal support could lead to the dislocation of TMJ articular discs, but there is a limited contribution to the prevention of TMD by prosthetic intervention to loss of post-teeth (Iizawa *et al.*, 2007). A recent review concluded that teeth loss and lack of subsequent occlusal support appear to have little impact on the development of TMD (Jumle *et al.*, 2015).

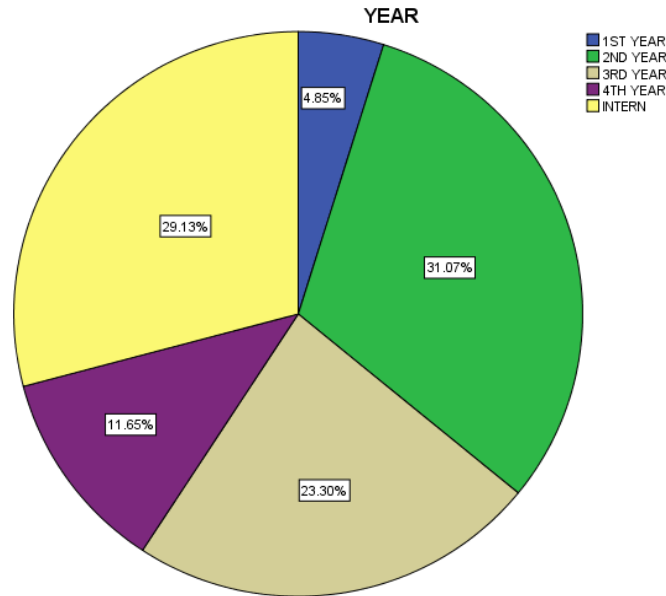
Further studies are needed to validate prosthodontic intervention in the presented situation for the primary purpose of TMD prevention (Denes *et al.*, 2018). Loss of subsequent teeth and reduction of occlusal units lead to impaired food capacity (Brickley and Shepherd, 1998). Although some studies on the effects of replacing posterior teeth with conventional removable partial dentures on masticatory performance have been reported, the results are controversial. Moreover, the subjective chewing ability has not been impaired when subjects have more than 20 well-distributed teeth (Tuteja, Balaji and Bahirwani, 2012). Therefore, prosthetic intervention may be unnecessary in the present situation if patients do not experience any deficiency of the chewing capacity. A recent analysis concluded that the SDA concept appears to be appropriate in addition to traditional prosthetic interventions as one of the treatment options, but needs ongoing testing, assessment, and discussion ('S14: Efficacy of molar distalization associated with second and third molar eruption stage', 2018). More specifically, the SDA concept indications have not been clearly defined. A German community has started multicenter studies to search for SDA indications. Studies have been launched by a Swedish group on the long-term effects on molars without antagonists (Fujimaki, Fueki, and Igarashi, 2007).



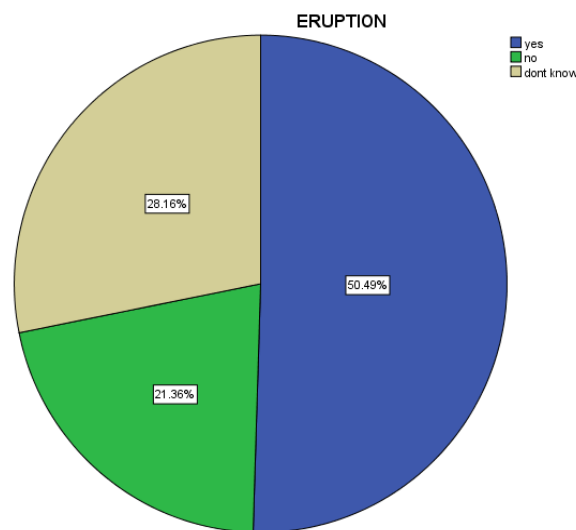
**Figure 1** shows percentage distribution to the question, “age distribution of participants”. majority of participants were (31.07%, blue) 19 years old, (20.39%, yellow) 23 years old, (17.48%, green) 20 years old, (12.62%, purple) 22 years old, (9.71%, brown) 21 years old, (4.85%, red) 24 years old, (3.88%, light green) 25 years old.



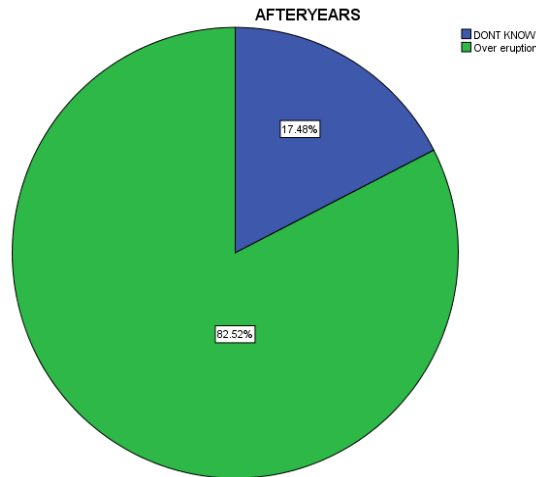
**Figure 2** shows the percentage distribution of responses to the question, “gender distribution” where the majority of the participants were female (58.25%, blue), (41.75%, green) participants were male.



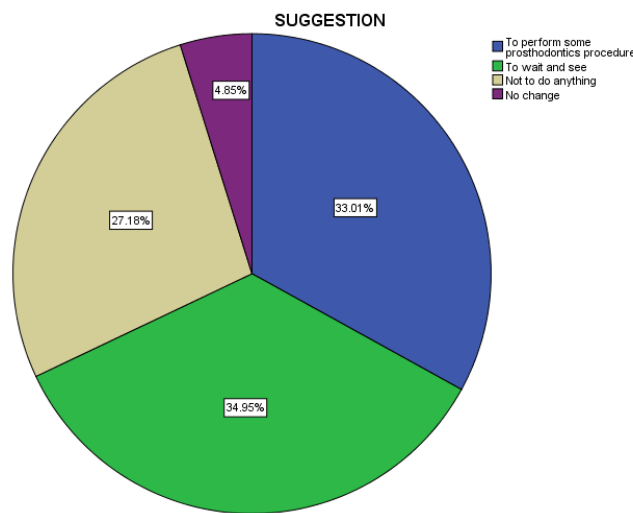
**Figure 3** shows percentage distribution of responses for the question, “Year of study among undergraduate student” where the majority of participants were intern (29.13%, yellow), (11.65%, purple) 4th year, (23.30%, brown) 3rd year, (31.07%, green) 2nd year, (4.85%, blue) 1st year.



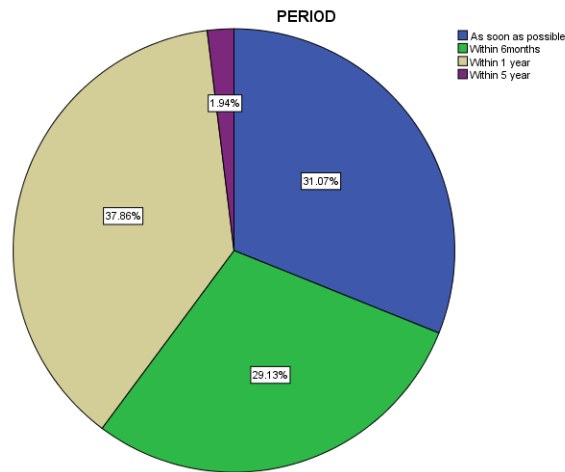
**Figure 4** shows percentage distribution of responses for the question “awareness about supra eruption” where the majority of participants were aware of supraeruption of molar (50.49%, blue), (21.36%, green) not aware about supraeruption of a molar, (28.16%, brown) don't know what is supraeruption.



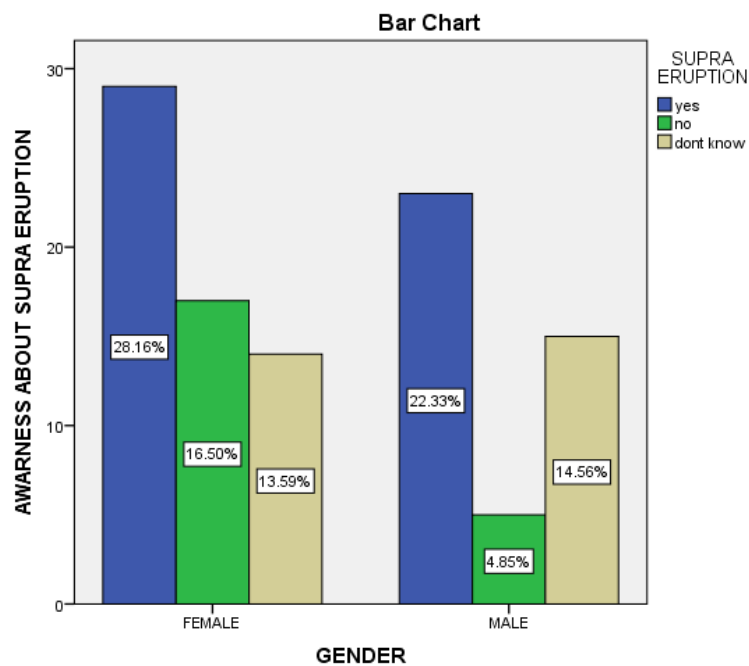
**Figure 5** shows percentage distribution of responses for the question, “ From study discussed what will happen to the patient after 10 years” where the majority of participants say supra eruption occurs after 10 years (82.52%, green),(17.48%, blue) don't know what will happen after 10 years



**Figure 6** shows percentage distribution of responses for the question, “ suggestion to overcome” where the majority of participants suggested to wait and see ( 34.95%, green),(33.01%, blue), To perform some prosthodontic procedure,(27.19%, brown ) not to do anything,(4.85%, purple) no change will happen.

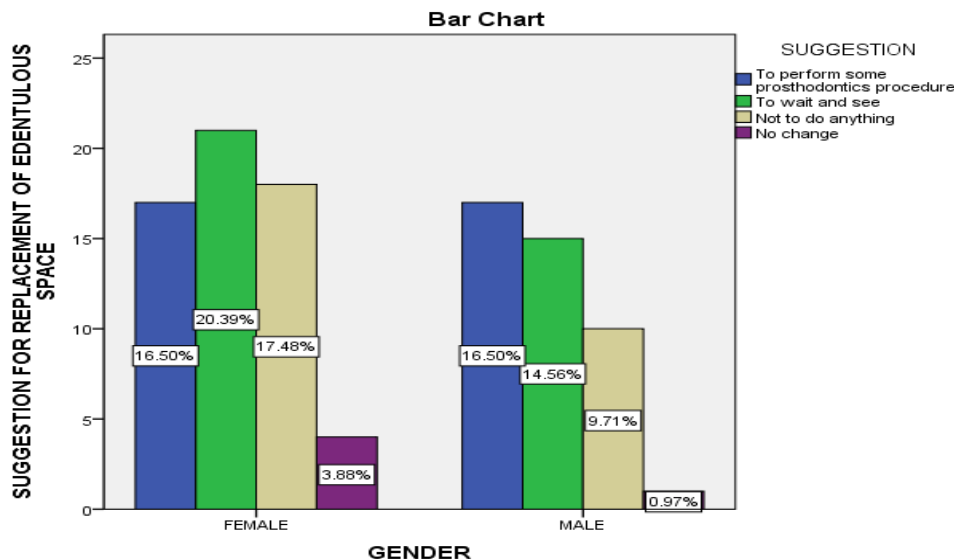


**Figure 7** shows percentage distribution of responses for the question “period of duration For replacement” majority of participants suggest to replace the missing tooth within 1 year (37.86%, brown ), (31.01%, blue) as soon as possible, (29.13%, green) within six months,(1.94%, purple) within 5 years.

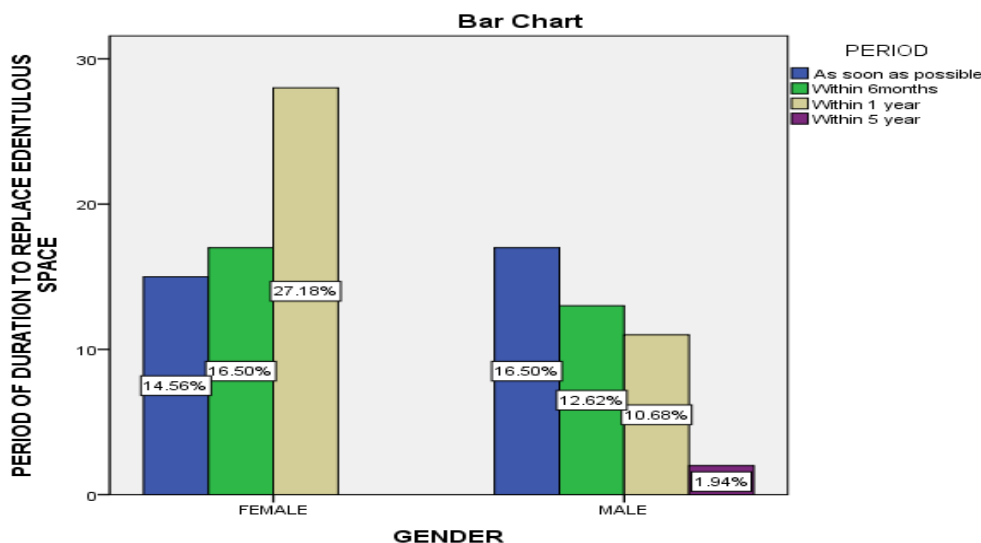


**Figure 8** represents the association between gender and knowledge about supraeruption, whereas blue color denotes yes, green color denotes no, brown color denotes don't know. X-axis represents gender and Y-axis represents awareness about supraeruption. Females are more aware about supraeruption of molars compared to males. However it is not statistically significant. Pearson's chi-square=4.59 ,(p=0.1 >0.05).

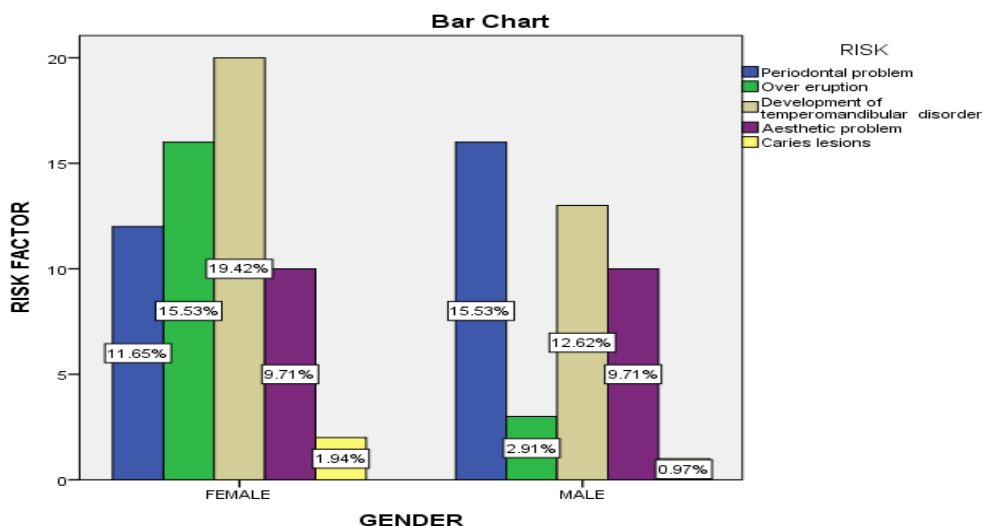




**Figure 9** represents the association between gender and suggestion for replacing the edentulous space. Blue color denotes to perform some prosthodontics procedure, green color denotes to wait and see, brown color denotes to not to do anything, purple color denotes to do no change. The X-axis represents the gender and Y-axis represents the suggestion for replacement of edentulous space. Female prefer to wait and see for replacement of edentulous space compared to male. However it is not statistically significant, Pearson's chi-square=2.34 (p-value=0.5 >0.05).



**Figure 10** represents the association between gender and period of duration to replace edentulous space whereas blue color denotes as soon as possible, green color denotes within 6 months, brown color denotes within 1-year. The X-axis represents the gender and Y-axis represents the period of duration for replacement of edentulous space with prosthetic devices. Among the females, there is a significant increase for the replacement of edentulous space with the prosthetic intervention (within 1 year) than the male. Pearson's chi-square=7.46 (p-value=0.05 =0.05).



**Figure 11:** represents the association between the gender and the risk of supraeruption. Blue color denotes periodontal problem, green color denotes supraeruption, brown color represents the development of temporomandibular disorder, purple color denotes aesthetic problems and yellow color denotes caries lesions. The X-axis represents the gender, Y-axis- represents the risk factor if edentulous space is not replaced. Females considered development of temporomandibular disorder as a major risk factor. However it is statistically non significant. Pearson's chi square=8.71 (p-value=0.06 >0.05).

## CONCLUSION

To date, Undergraduate seems to believe that supraeruption of molars would occur after the extraction of antagonists and that prosthetic interventions are necessary to prevent possible clinical problems. Therefore much more knowledge about supraeruption of molar is needed among undergraduate students. This will help in prevention of major clinical problems.

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None

## AUTHOR CONTRIBUTION

A.S.Pavithra has contributed for, execution of the work, data collection and drafting of manuscript. Dr.Venkatesh komi has contributed for, concept and design of the study, validation of the data collection, revision and proof-reading of the review. Anjali.A.K has contributed for, validation of the data collection, revision and proof-reading of the review.

## CONFLICTS OF INTEREST

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

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