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A Data Analysis On Most Frequently Reported Teeth For Non Vital Bleaching And A Retrospect Analysis On Reasons - A Single Cantered University Based Study.

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ABSTRACT:
Introduction:
Non-vital bleaching is a walking bleaching technique, which is done with a use of sodium perborate alone or in combination with superoxol. Sodium perborate used alone has less potential for external cervical resorption. Non vital bleaching is considered as the most non-invasive post endodontic procedure to lighten the tooth.
Aim:
The aim of the study was to analyse the most commonly reported teeth for non vital bleaching.
Materials and methods:
It is a university based study, data was collected and analysed through SPSS and the results were given in the form of bar graphs.
Results:
From the study, it was seen that maxillary central incisors are the most commonly reported teeth for non vital bleaching of about 76% and the reason for this could be due to pulpal trauma(56%). **Conclusion**:
Proper selection of bleaching agent and technique had resulted in the conservative and successful management of the case. Appropriate bleaching techniques should be selected to manage discolored teeth.
Keywords:
Non vital bleaching, pulp, haemorrhage, sodium perborate.

INTRODUCTION:

Discoloration of the tooth results from trauma, loss of vitality, endodontic treatment, and restorative procedures (1) The remnants of the blood stain consequent to trauma or incomplete removal of pulp during endodontic treatment lead to hemolysis(2,3). The chromogenic blood degradation products, such as hemosiderin, hemin, hematin, and hematoidin, get deposited in the dentinal tubules(4). The

accumulated breakdown products lead to grayish-yellow to brown discoloration of the teeth. Other causes such as obturation materials, remnants of pulp tissue in the pulp horns, intracanal medicaments, and coronal restorations may also cause discoloration(5). The discolored anterior teeth can cause significant esthetic concerns(6).

Nonvital bleaching for a root-filled tooth is carried out intracoronary or using a combination of external and internal procedures (7). Several products and different techniques are available for tooth bleaching, with most variations relating to concentration and type of peroxide releasing agents. Basically, the mechanism of action of bleaching agents is similar. Peroxide-containing agents break down into water and oxygen, which diffuses through the dental structure, causing oxidation and reduction of organic pigments that are located mainly within the dentin structure, ultimately producing the whitening effect (8).

The “walking bleach” technique uses a mixture of sodium perborate and water or 30% hydrogen peroxide (superoxol) and may be utilized if the chairside results are inadequate or if you prefer to avoid the possibility of a higher chance of cervical root resorption. The sodium perborate when fresh is 95% perborate giving off 9.9% of available oxygen. This material is more easily controlled and safer than Superoxyl, therefore, it is the material of choice (9–11). Indications for internal bleaching are discoloration of pulpal origin, dentin stains, and stains not amenable to extracoronal bleaching. Contraindications to internal bleaching are superficial enamel stains, defective enamel formation, severe dentin loss, presence of caries, and discolored composites. The aim of this study is to analyse the most commonly reported tooth for non vital bleaching.

MATERIALS AND METHODS:

Study setting:

A university set up was selected for this study which provided easy accessibility to the data and the population was of similar ethnicity for this study. Before scheduling the study official permission and approval was obtained from the university (ethical approval number - SDC/SIHEC/2020/DIASDATA/0619-0320).

Data collection :

The patients treated with non vital bleaching were taken into study. Data was retrieved from the dental case records of Saveetha Dental College, chennai.

Inclusion and exclusion criteria:

The data of all non vital bleaching treated patients among all the age groups of were included for this study; case records with incomplete data where the non vital bleaching were left untreated and various factors like age, tooth number not mentioned were verified from the concerned patient case sheets or the department were excluded from the Study.

Statistical analysis:

These data were tabulated in the Microsoft excel sheets and were imported to the SPSS (Version 20.0) software. After entering the data in SPSS software the variables were verified and association was done between different age groups, gender, tooth number. Data was analysed using Chi-square test.

RESULTS AND DISCUSSION:

In this study, 75% of the patients were of age group 15-30 years and 25% of were 30-45 years of age group. 70% of them were male patients and 30% of them were female patients. Most commonly reported tooth for non vital bleaching in this study was maxillary central incisor(77%), followed by maxillary lateral incisor(15%), mandibular central incisor(5%), mandibular lateral incisor(1%). The main reason for non vital bleaching could be mainly due to pulpal trauma like pulpal haemorrhage(56%).

Other treatments for the single darkened tooth have included intentional endodontics or creating an artificial pulp chamber and bleaching the tooth with the walking bleaching technique. Because of the slight potential for cervical resorption, the loss of tooth structure, and the less than 100% chance of success with endodontics, home bleaching should be considered the first choice for altering the color of these teeth (12,13).Often the walking bleaching technique is desirable to ensure the removal of debris and discolored restorative materials from the pulp chamber. However, occasionally a tooth that has previously been bleached by the walking bleaching technique and sealed with a finished etched composite resin will discolor. In this instance, the first treatment considered should be bleaching the tooth externally with the nightguard vital bleaching technique.

The nightguard vital bleaching technique should be considered as the first choice of treatment for any discolored teeth, even those considered for the placement of porcelain or other esthetic veneers. Attempting nightguard vital bleaching first may avoid the need for veneers. However, even if the technique is unsuccessful in achieving the desired shade, or if there are other indications for veneers other than the tooth color, bleaching may lighten the underlying tooth base and make the subsequent veneer more esthetic, as well as allow the patient to evaluate the results of the more conservative option first (14)

In our study, the age group of 15-30 years were the most commonly reported patients for non vital bleaching of about 75%. Similarly In another study, age groups (19-25 years) were commonly treated with non vital bleaching . In our study, the most commonly reported teeth were maxillary central incisor(77%). Similarly in another study, upper anteriors (51.6%) was most commonly treated with non vital bleaching among all the age groups (15).

For nonvital tooth bleaching, bleaching treatment with high concentration HP agents has provided good clinical results (16). However, a side effect related to high concentration HP products is the potential occurrence of external root resorption making the dentists more cautious with their use. External root resorption is related to the penetration of bleaching agents into the dentinal tubules at the cementoenamel junction, producing an immunological response in the periodontal tissues. It has been shown that high HP concentrations alter dramatically the structural and biochemical properties of dental hard and soft pulp tissue (17).

The use of SP (+ water or HP) inside the pulp chamber in the walking bleach technique may reduce the chance of external root resorption because SP is less caustic and releases a smaller amount of ions. This technique also shows comparable results to those of >30% HP and a heat source (18). More recently, higher concentration CP gels have been launched to the market with indications to treat non vital discolored teeth and became more popular than HP products.

A possible explanation could be the greater availability of CP products. In addition, potential side effects related to high concentration HP agents, such as external root resorption (19), are minimized because of the lower final amount of ions released from CP products. As a higher HP concentration is desirable for non vital tooth bleaching, a large number of participants of this survey did not select CP at low concentrations. Nevertheless, some in vitro results disclosed that even these lower concentrations would be able to bleach discolored non vital teeth. The limitations of this study could be short sample size, restricted geography.

Our team has extensive knowledge and research experience that has translate into high quality publications(20–29),(30–33),(34–38) (39)

CONCLUSION:

Non-vital bleaching is a minimally invasive procedure to restore the esthetics of a discolored non-vital tooth. However, care should be taken to prevent any postoperative complications. The most commonly reported tooth was maxillary central incisor followed by maxillary lateral incisor and the reason for non vital tooth could be due to pulpal haemorrhage and trauma to pulpal tissue.

AUTHORS CONTRIBUTION:

Vinaya Swetha.T:Literature search, data collection, analysis, manuscript drafting.

Dr. Kavalipurapu Venkata teja: Data verification, manuscript drafting.

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CONFLICT OF INTEREST:

All the authors declare that there was no conflict of interest in present study.

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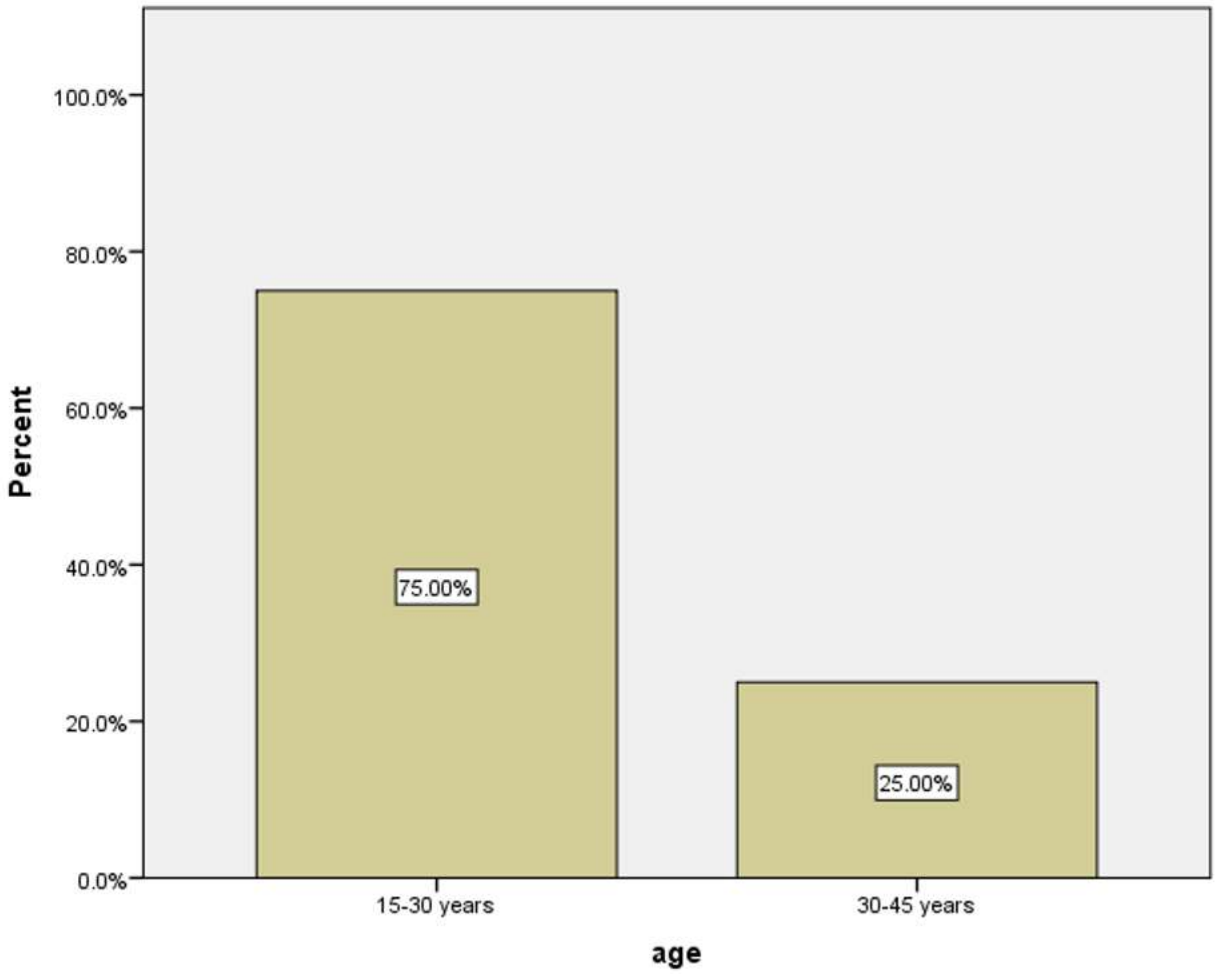

Figure 1: The bar graph depicts the percentage of age group of the patients reported to the clinic for non vital bleaching. The age group of 15-30 years were about 75% and 30-45 years were 25%.

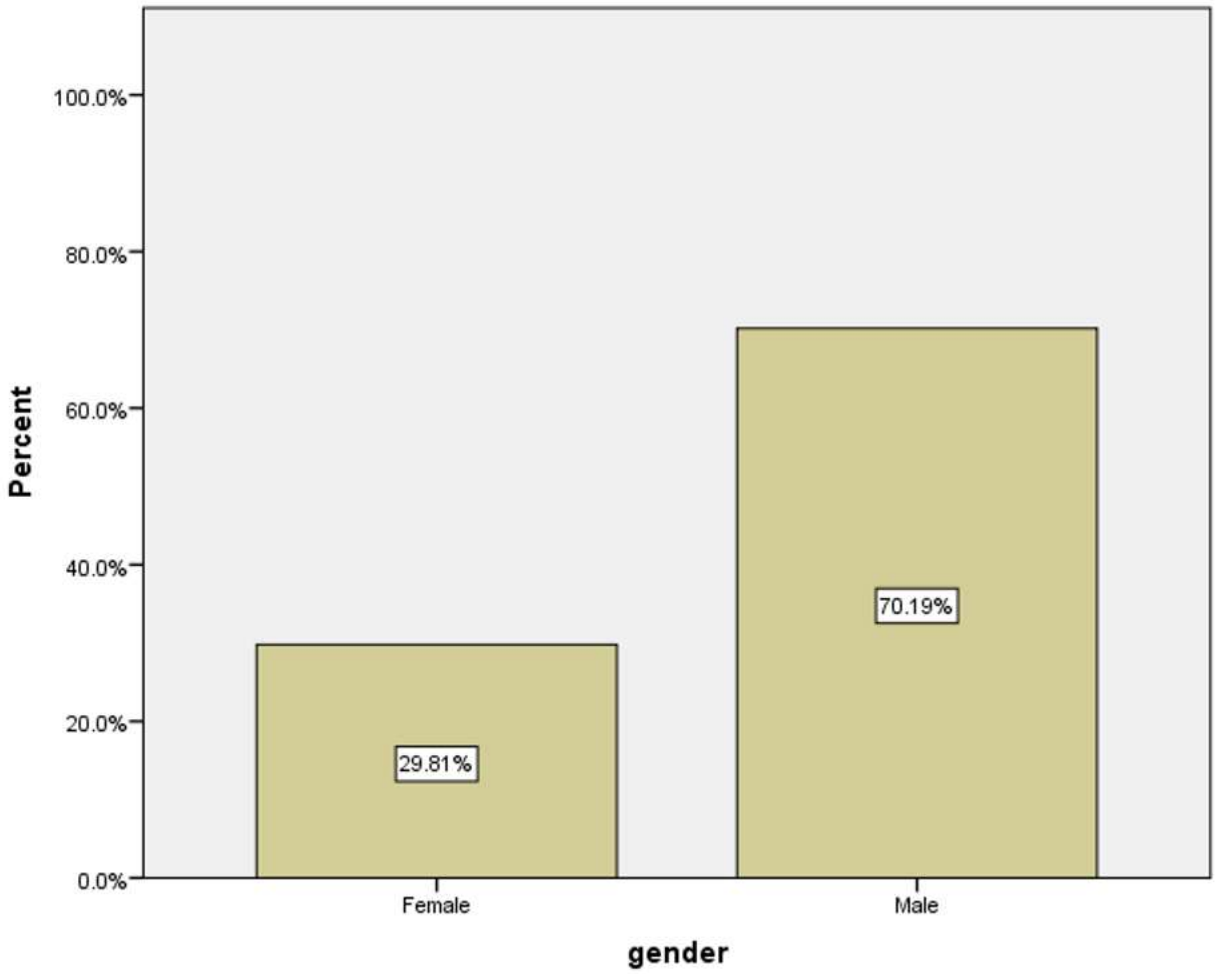

Figure 2: The bar graph depicts the percentage of gender of the patients reported to the clinic for non vital bleaching. 70% of them were male patients and 30% of them were female patients.

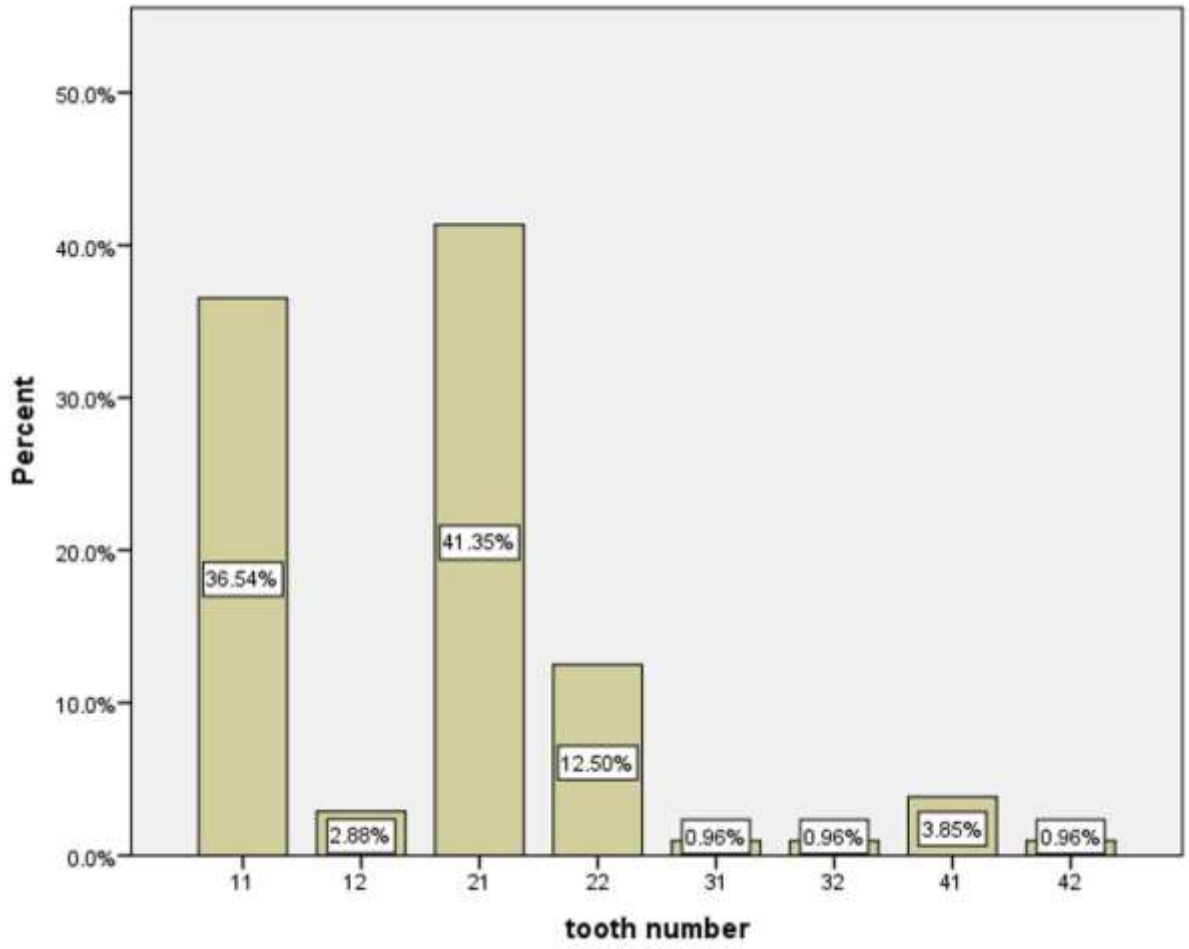

Figure 3: The bar graph depicts the percentage of tooth number of the patients reported to the clinic for non vital bleaching. Most commonly reported tooth were maxillary central incisor(77%), followed by maxillary lateral incisor(15%), mandibular central incisor(5%), mandibular lateral incisor(1%).

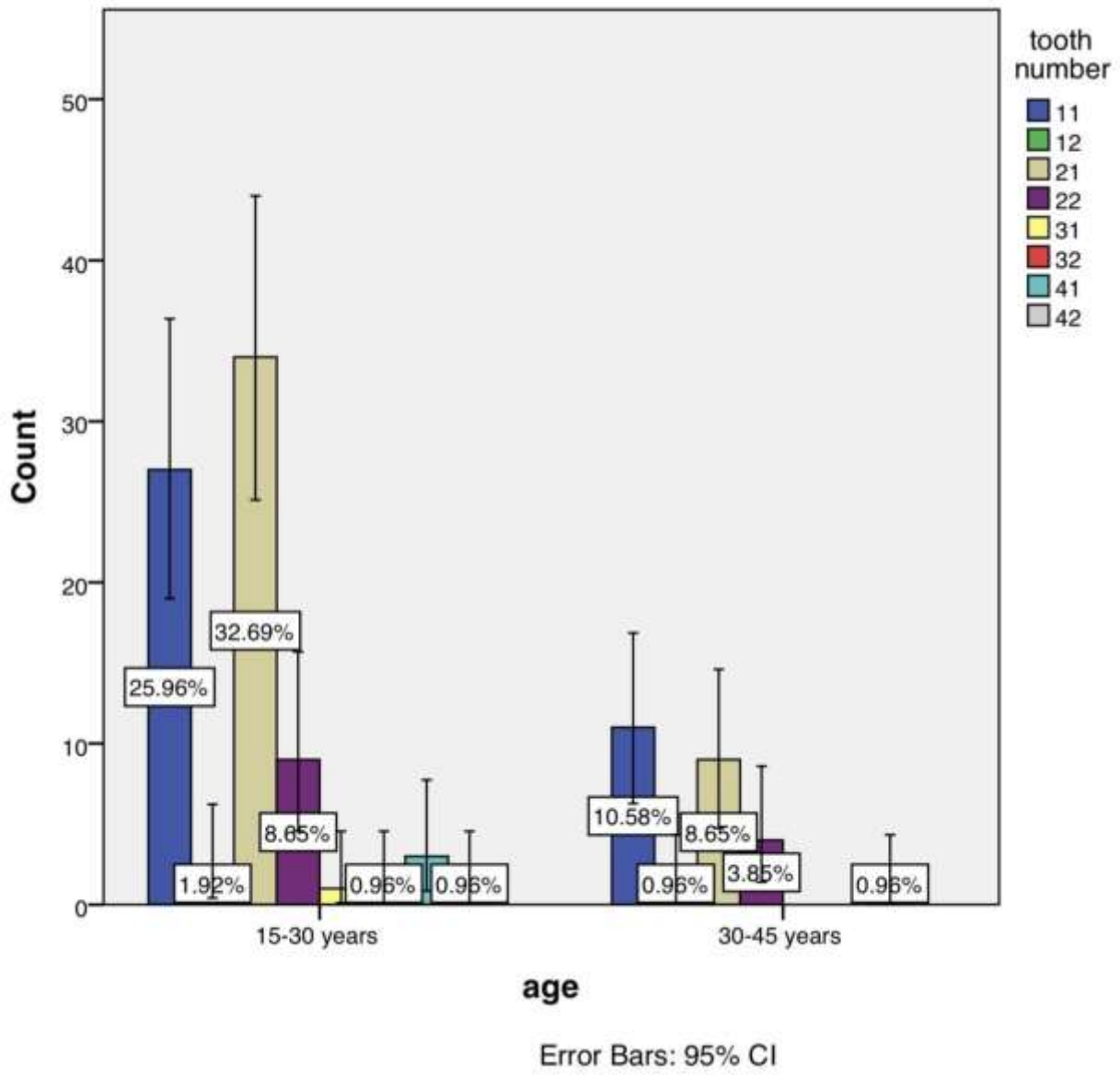

Figure 4: The bar graph depicts the correlation between tooth number and age of the patients reported to the clinic for non vital bleaching. X axis denotes the tooth number of the patients for non vital bleaching and Y axis denotes the count of the patients.

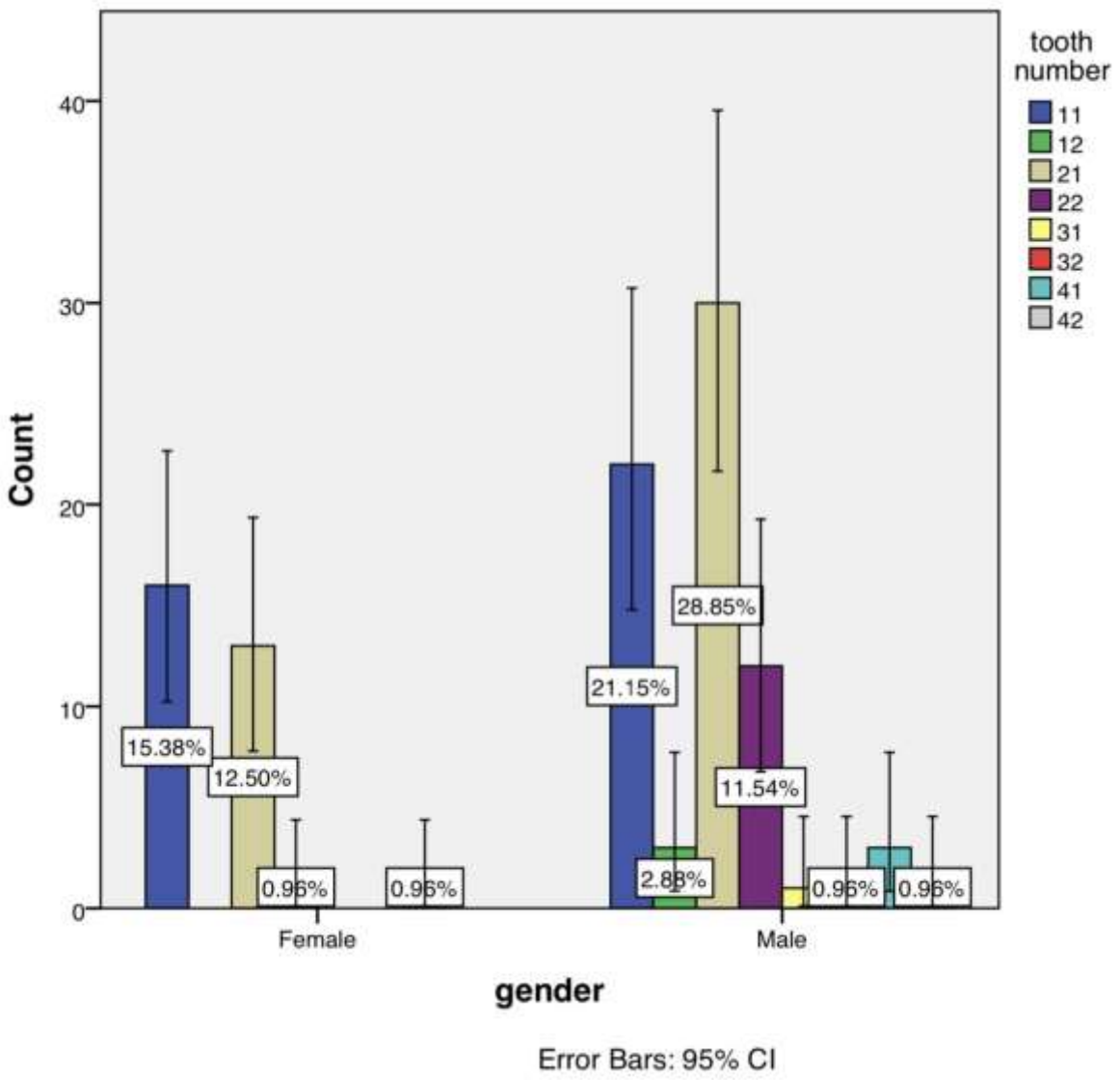

Figure 5: The bar graph depicts the correlation between tooth number and gender of the patients reported to the clinic for non vital bleaching. X axis denotes the tooth number of the patients for non vital bleaching and Y axis denotes the count of the patients.