

# KNOWLEDGE, ATTITUDE AND PRACTICES ON USE OF ELECTRIC TOOTHBRUSHES AMONG DENTAL STUDENTS.

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## **ABSTRACT:**

## **INTRODUCTION:**

There are numerous types of electric toothbrushes available commercially, which are proven to be effective in improving plaque control and improving oral hygiene. Many studies have shown electric toothbrushes to be better than manual toothbrushes in removing plaque and maintaining good oral hygiene. Proper information, attitude, and practises of electric toothbrushes may lower the incidence of caries, periodontal infections, and indirectly lessen the burden of oral disease on the growing economy. The purpose of this study was to determine dental students' knowledge, attitudes, and practices regarding the usage of electric toothbrushes.

**MATERIALS AND METHODS:**

An online questionnaire survey was done among the dental students of Saveetha Dental College, Chennai to assess their knowledge, attitude and practice regarding the use of electric toothbrushes. A 10 point validated questionnaire was prepared in the English language and circulated through an online link. The sample size was 100. The data was collected and were subjected to statistical analysis using SPSS software. The descriptive data obtained were plotted in bar graphs. The Chi-Square test was done to find the difference in the knowledge between students of different years of study with a p value of 0.05 set as statistically significant.

**RESULTS:**

In the present study, 77.8% of the participants did not use an electric toothbrush while only 22.2% of the students had used an electric toothbrush. 72.7% dental students don't recommend using an electric toothbrush to their patients and only 27.3% of them recommended using electric toothbrush to their patients. Undergraduate students had significantly more awareness regarding the greater efficacy of electric toothbrushing in removing plaque in both primary and permanent dentition with p value of 0.001.

**CONCLUSION:**

This study concluded that most students were aware of electric toothbrushes. However, dentists should work to promote patient understanding and awareness on the usage of electric toothbrushes in order to improve plaque control and oral health.

**KEYWORDS:**

Awareness, Electronic toothbrushes, dental students, plaque, practice, Innovative technology

**INTRODUCTION:**

Tooth brushing is a common oral hygiene method for removing plaque. Despite the fact that mechanical plaque removal by self-care is the most effective way for plaque control (1), it is believed that various manual brushing techniques only partially remove plaque and are less

effective in interproximal areas (1,2). Electric toothbrushes, on the other hand, are more effective and dependable at removing plaque from supragingival and interproximal areas than manual toothbrushes (3). Several studies comparing manual and electric toothbrushes clearly demonstrate the efficacy of electric toothbrushes, demonstrating that they are more effective and convenient than manual toothbrushes (4). (5). Personal patient motivation, on the other hand, is critical for these mechanical plaque removal tools to perform effectively and efficiently (6). Even when brushing regularly, people who use a manual toothbrush on a daily basis have difficulty achieving oral cleanliness (7).

Plaque eradication with electric toothbrushes requires less force than with manual brushes. Furthermore, in vitro investigations have shown that brushing with a low force can obstruct patent dentin tubules by forming a smear layer. As a result, reducing the force required to remove plaque may help to minimise dentin hypersensitivity. However, it has recently been claimed that using an oscillating/rotating powered toothbrush instead of a sonic powered toothbrush can reduce tooth sensitivity. (7,8).

It is not wrong to state that electric toothbrushes have two significant therapeutic advantages over manual toothbrushes: efficacy and compliance (9). Despite these empirically proved advantages, fewer dental professionals promote powered brushing over manual brushing to their patients and the general public. Dentists' limited recommendations of electric toothbrushes may raise questions about their understanding and attitude toward scientific facts on electric toothbrushes and their advantages over manual techniques. Our team has extensive knowledge and research experience that has translated into high quality publications (10–22),(23–27) (28) (29). The objective of this study was to assess the knowledge, attitude and practices towards electric toothbrush use among dental students of Saveetha Dental College.

**MATERIALS AND METHODS:** An online questionnaire based survey was carried out among the dental students of Saveetha Dental College, Chennai to assess their knowledge, attitude and practice regarding the use of electric toothbrushes. A 10 point validated questionnaire was prepared in the English language and circulated through an online link. The sample size was 100.

Anonymity was maintained, the purpose of the study was explained to the participants in detail and the questionnaire was filled with their consent. The data was collected and were subjected to statistical analysis using IBM SPSS version 2.0 statistical software. The descriptive data obtained were plotted in bar graphs. The Chi-Square test was done to find the difference in the knowledge between students of different years of study with a p value of 0.05 set as statistically significant and confidence interval of 95%.

### **RESULTS AND DISCUSSION:**

In the present study, 30.3% of the participants were post-graduate dental students and 69.7% of the participants were undergraduate dental students. 39.4% of the participants were females and 60.6% of them were males.

80.8% of the participants were aware that an electric toothbrush was better than the manual toothbrush at removing supragingival plaque and resolving gingivitis. Electric toothbrushes have been demonstrated in numerous studies to be superior to manual toothbrushes in eliminating plaque and maintaining good oral hygiene (30). Hellstadius et al (31) found that switching from manual to electric toothbrushes reduced plaque levels and improved compliance in patients with periodontitis. Regarding the efficacy of electric toothbrushing for both primary and permanent teeth, 80.8% of the students were aware that electric toothbrushes achieved significantly greater plaque removal from both primary and permanent dentition while 19.2% of the participants thought that mechanical toothbrushes can also remove plaque significantly. Regarding the toothbrush induced gingival trauma, 79.8% believed manual toothbrushes generated more gingival lesions than electric toothbrushes, while 20.2 percent did not believe manual toothbrushes caused gingival lesions. The difference in brushing pressure between the electric and manual toothbrushes may potentially contribute to the lower number of gingival lesions after using the electric toothbrush. The average brushing force for powered brushing is only one-third of the force utilised with manual brushing, according to a study by Phaneuf et al (32). The aforementioned responses show that the participants were well-informed about the scientific data supporting the superiority of electric toothbrushes over manual toothbrushes.

When asked about availability of the electric toothbrushes in the local stores, only 46.5% of the participants responded that it's easily available in the local market but 53.3% of the participants responded that it wasn't easily available in the local market. Many of them did not find it cost effective to recommend it to their patients. 77.8% of the participants believed that lack of awareness is the cause for less people using electric brushes. These responses indicate that though the participants had a positive attitude towards the use of electric toothbrushes; its cost and lack of availability are the major deterrents for not prescribing them to their patients. Furthermore, research shows that teaching and informing dentists about electric toothbrushes improves their view and its impact on patient dental hygiene.

In the present study, regarding the practice of using electric toothbrushes 77.8% of the participants answered that they didn't use an electric toothbrush and only 22.2% of the participants had used an electric toothbrush. 72.7% dental students did not recommend using an electric toothbrush to their patients and only 27.3% of them recommended using electric toothbrush to their patients. This indicates that though the participants were adequately aware and had a positive attitude towards electric toothbrushes, there was a gap between the knowledge and implementation of it in clinical practice.

On comparing the association between the level of education and awareness that electric toothbrush achieved significantly greater plaque removal from both primary and permanent dentition, a statistically significant association was noted with p value of 0.001. Statistically significant association was noted between level of study and awareness of the efficacy of electric toothbrush in removing supragingival plaque and resolving gingivitis better than manual toothbrush with p value of 0.001. Post graduates had better awareness regarding the efficacy of electric toothbrushes which may be attributed to their experience.

#### **CONCLUSION:**

The current study concluded that, while dental students' knowledge is acceptable and they have a favourable attitude toward electric toothbrushes, dentists should work to raise patient education and awareness about the usage of powered toothbrushes in order to promote plaque control and

oral health. By reducing plaque-related disease in the population, this will undoubtedly minimise the burden of oral disease on the developing economy.

#### **AUTHORS CONTRIBUTION**

Ushanthika T: Literature search, data collection, data analysis, manuscript writing.

Dr.Parkavi : Study design, data verification, manuscript drafting.

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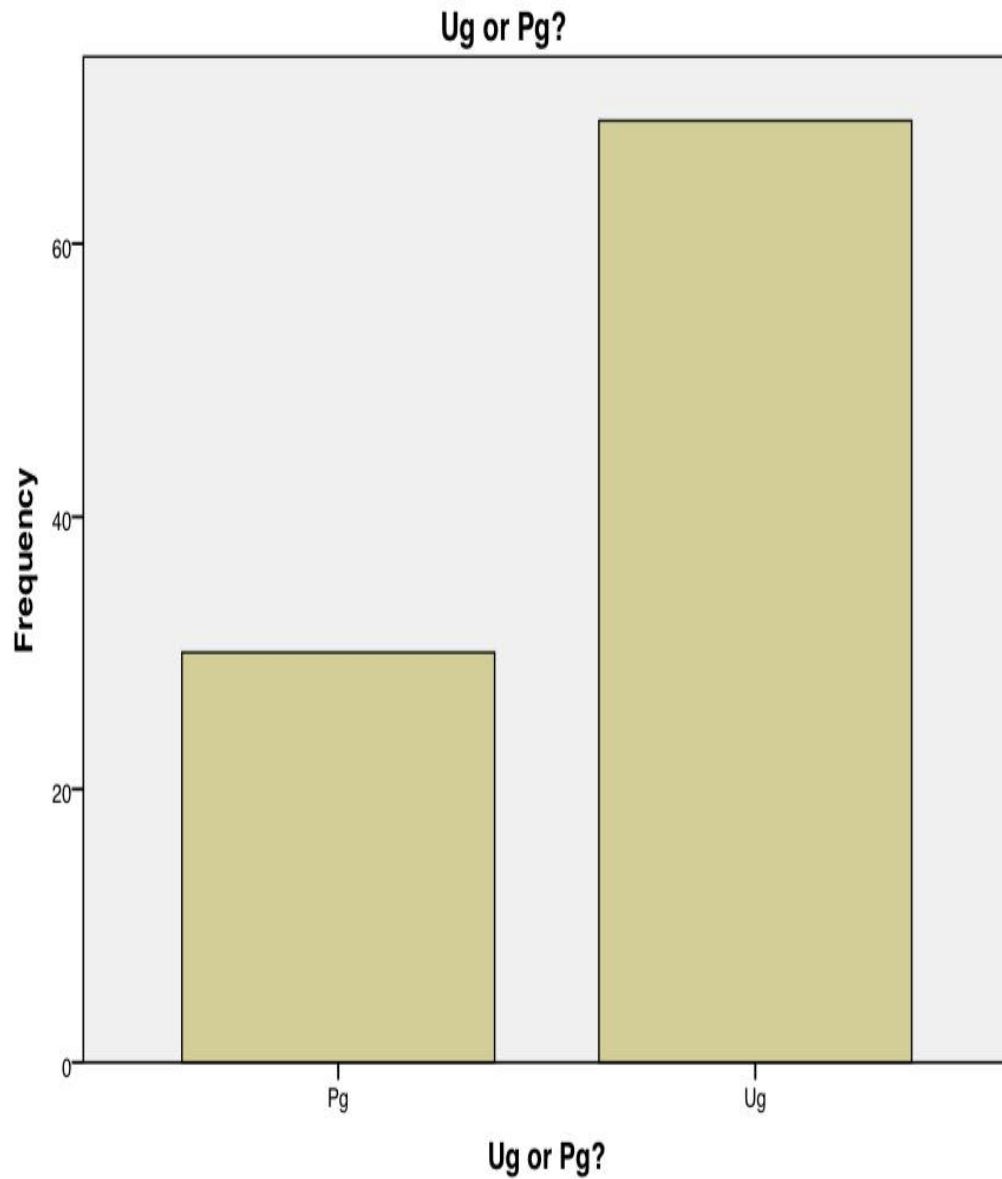


Figure 1: Bar chart depicting that 30.3% of them were post-graduate students and 69.7% of them were undergraduate students.

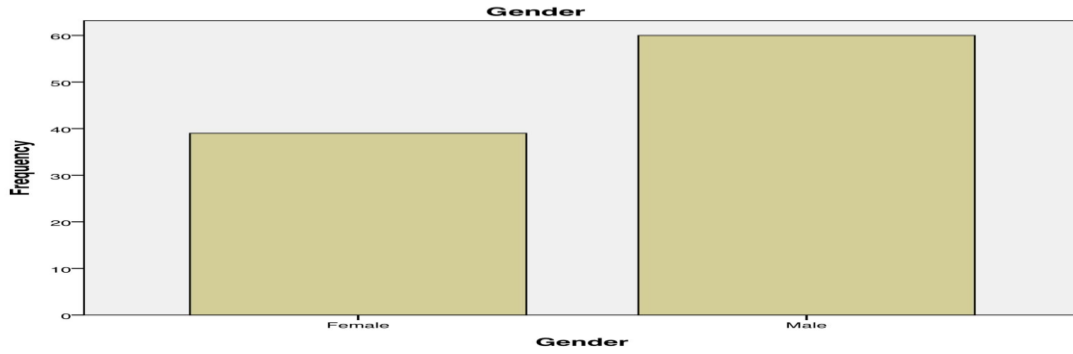


Figure 2: Bar chart depicting the gender population involved in the overall study. Out of which 39.4% of them were females and 60.6% of them were males.

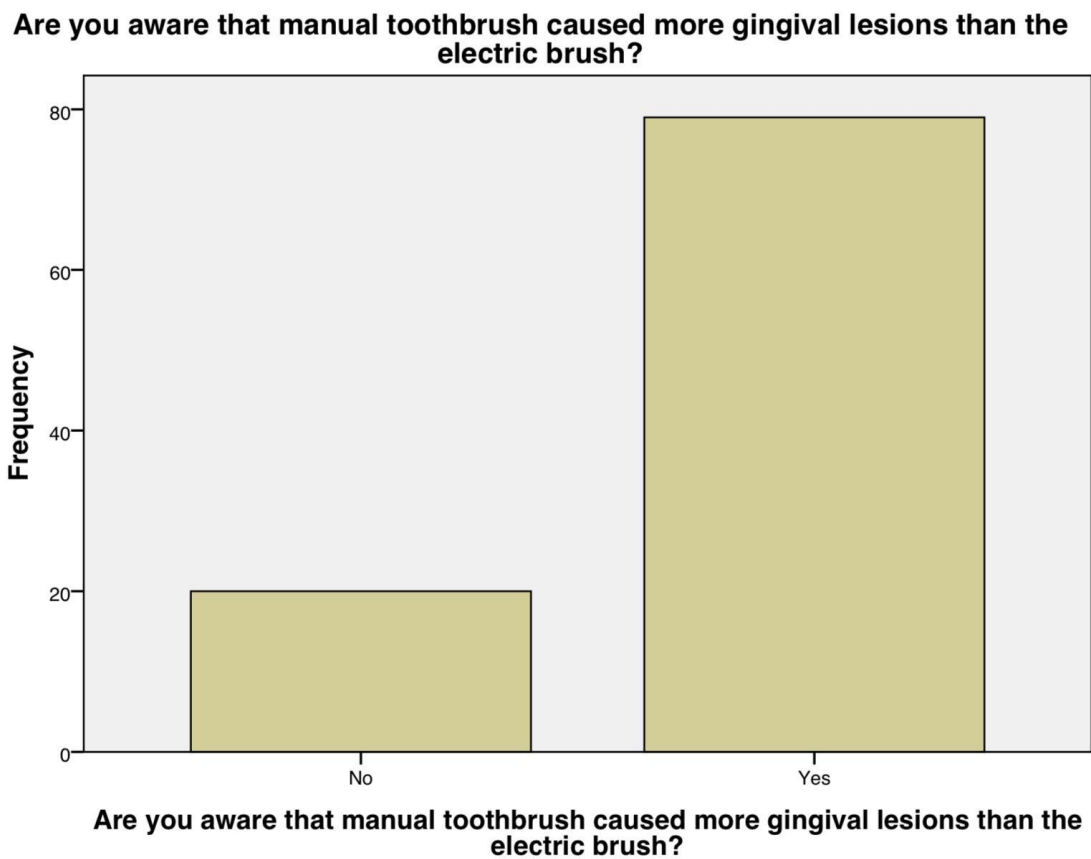




Figure 3: Bar chart depicting that 79.8% thought that manual toothbrush caused more gingival lesions than the electric brush and 20.2% of them did not think manual toothbrush caused gingival lesions

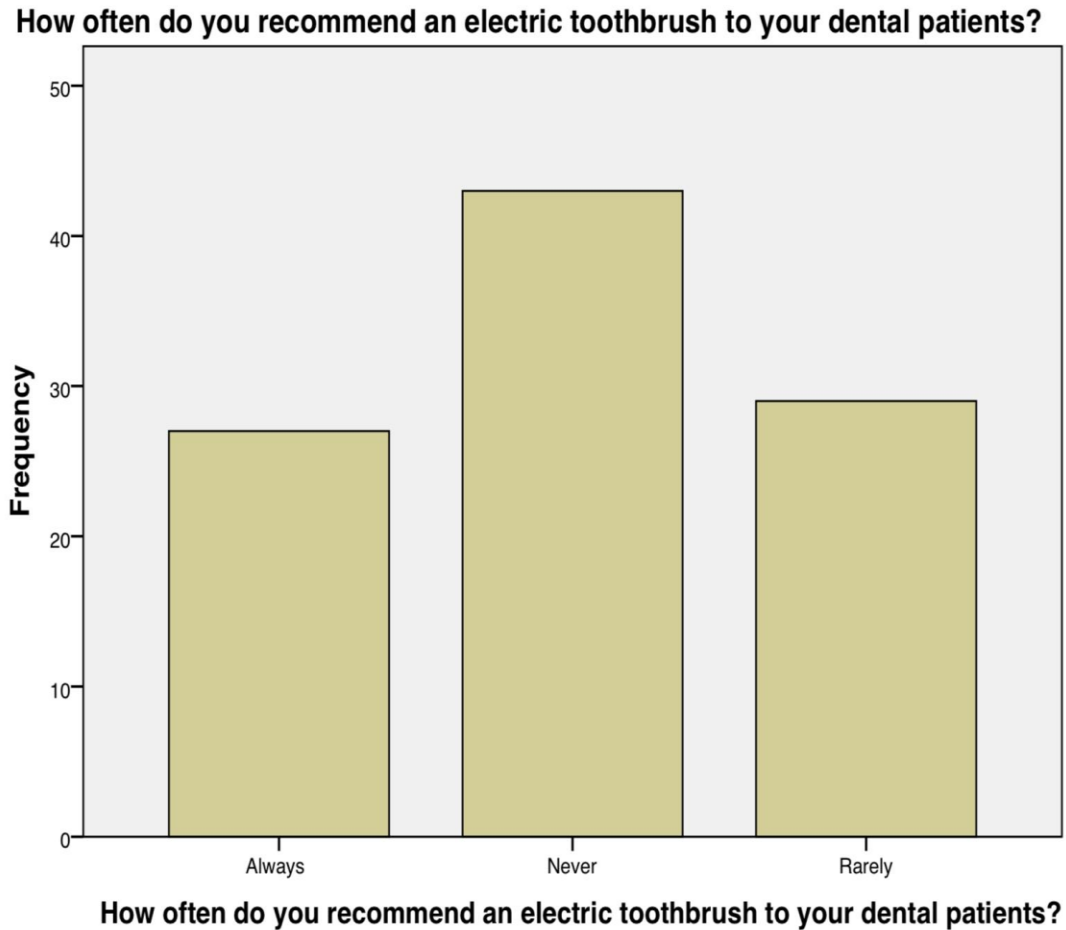
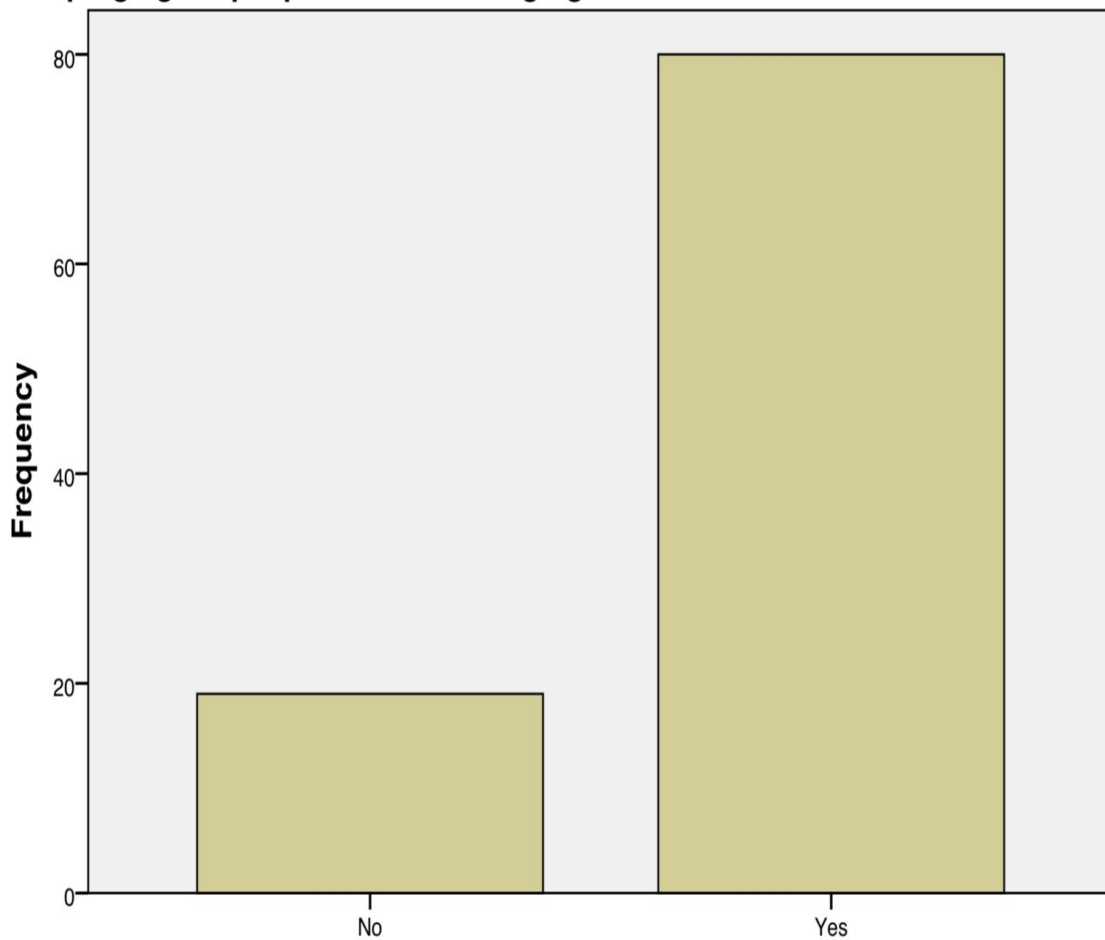


Figure 4: Bar chart showing that 72.7% dental students don't recommend using an electric toothbrush to their patients and only 27.3% of them recommended using electric toothbrush to their patients.

**Did you know studies have shown that electric toothbrush removed supragingival plaque and resolved gingivitis better than the manual brush?**



**Did you know studies have shown that electric toothbrush removed supragingival plaque and resolved gingivitis better than the manual brush?**

Figure 5: Bar chart showing that 80.8% of the students knew that studies have shown that electric toothbrush removed supragingival plaque and resolved gingivitis better than the manual brush and 19.2% of the students don't know.

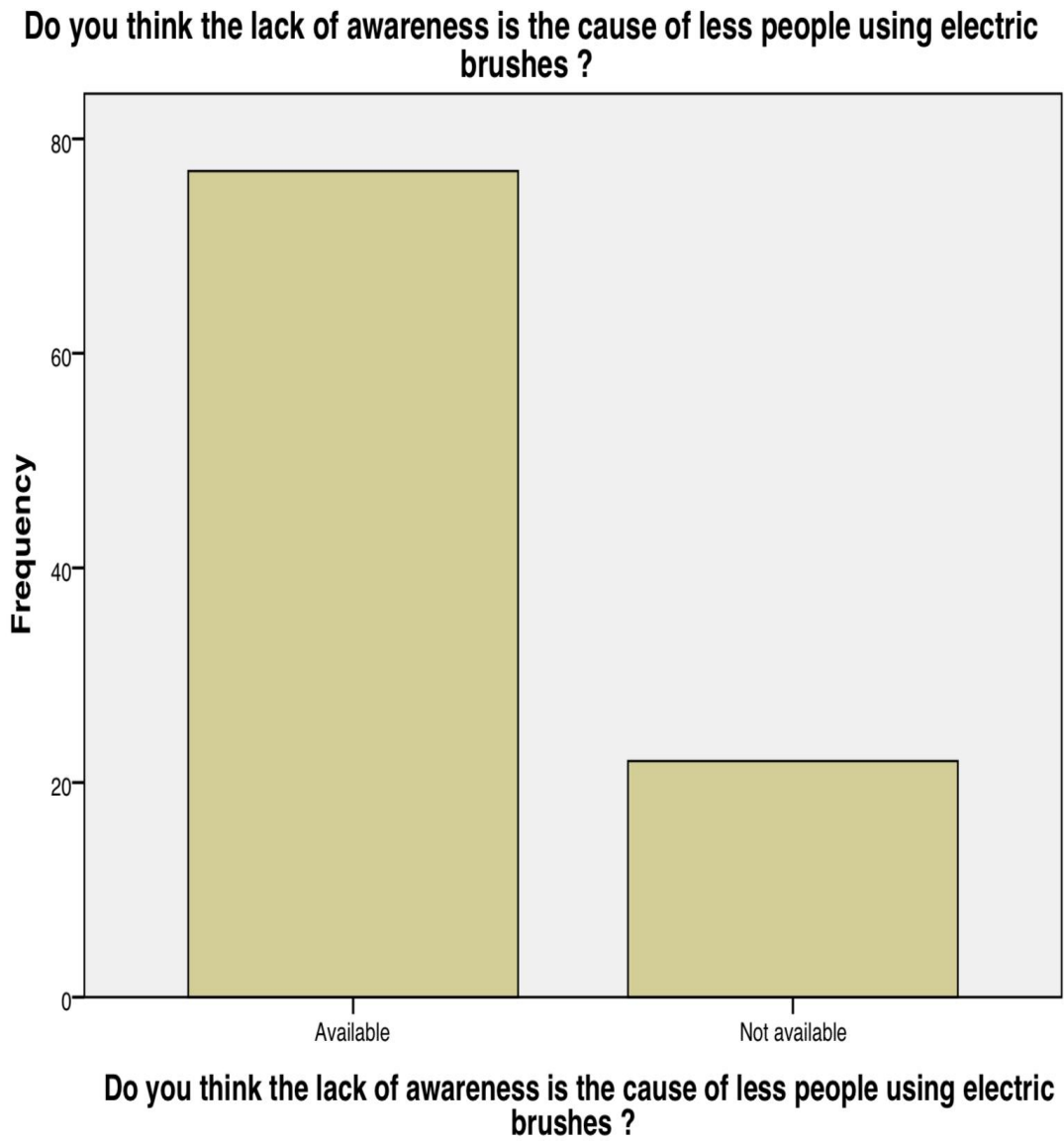


Figure 6: Bar chart showing that 77.8% of the dental students think that lack of awareness is the cause of less people using electric brushes.

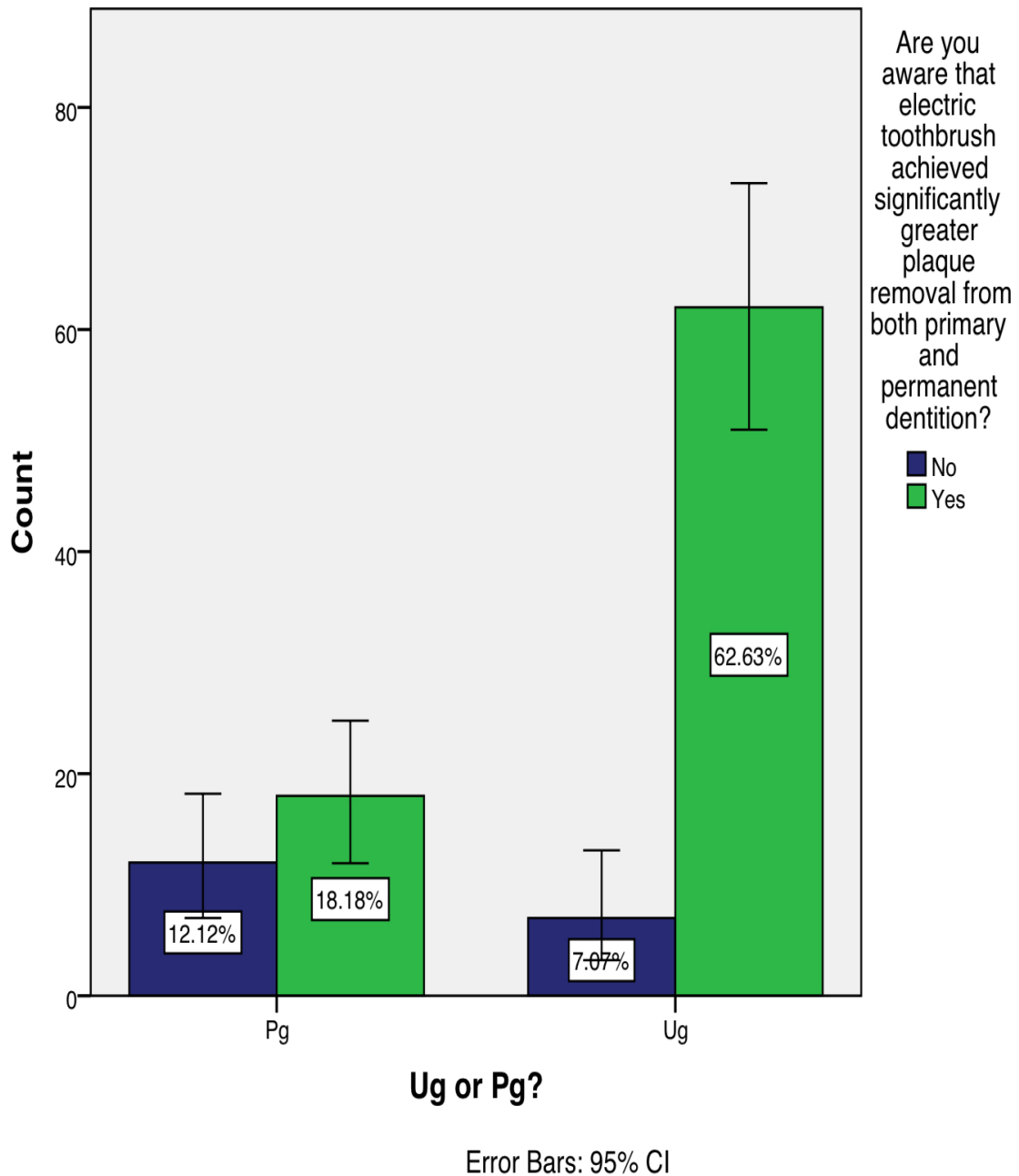


Figure 7: Bar graph depicting the association between level of education and awareness that electric toothbrush achieved significantly greater plaque removal from both primary and permanent dentition with p value of 0.001.

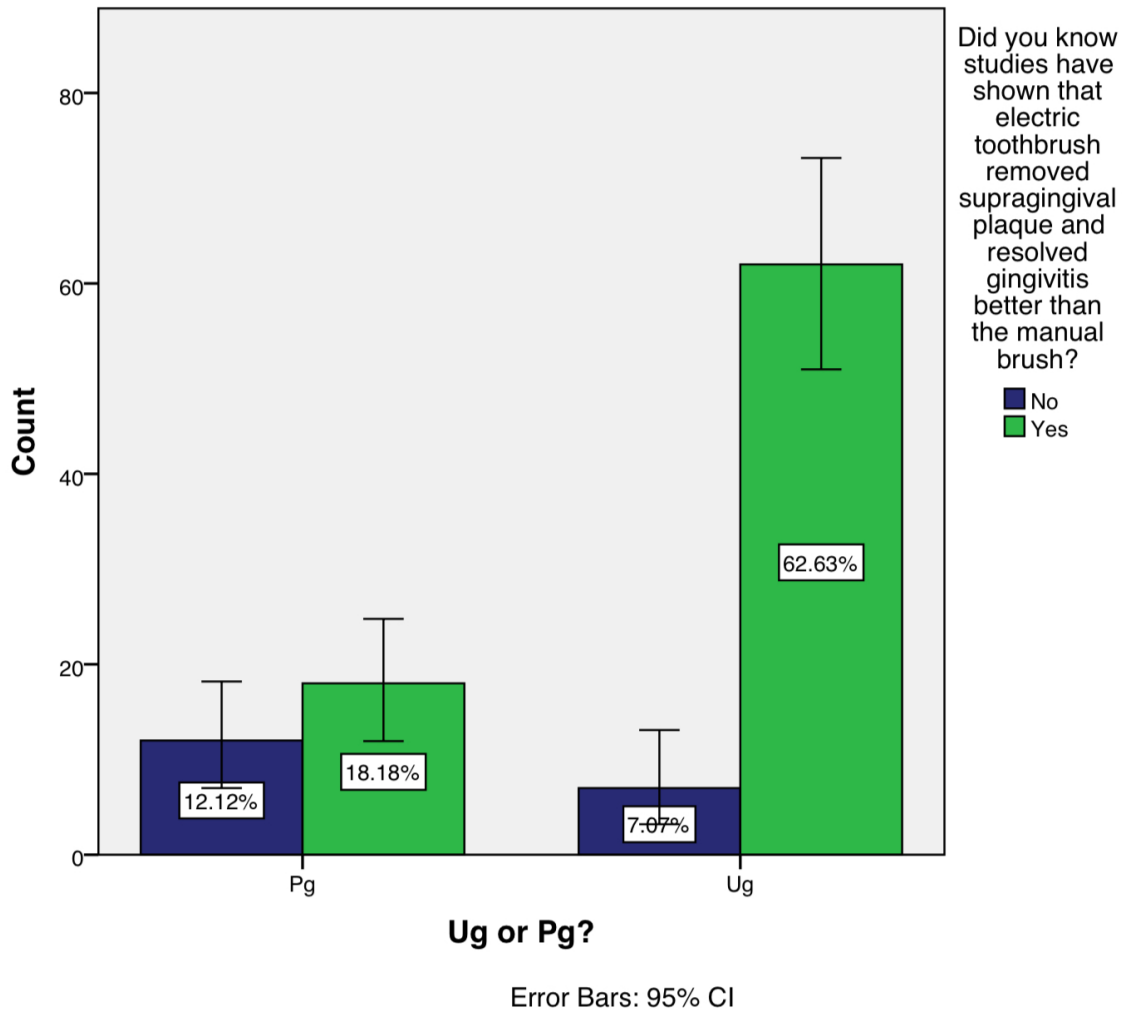


Figure 8: Bar chart depicting the association between level of study and awareness that electric toothbrush removed supragingival plaque and resolved gingivitis better than manual toothbrush with p value of 0.001.

**CONCLUSION:**

This study concluded that most students were aware of electric toothbrushes. However, dentists should work to promote patient understanding and awareness on the usage of electric toothbrushes in order to improve plaque control and oral health.

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