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RETROSPECTIVE ANALYSIS OF THE TEETH THAT WERE TREATED FOR NON VITAL BLEACHING IN RELATION TO AGE AND GENDER

Hanish D[1], Dr. J. Lakshmi Prabha[2*], Dr. Delphine Priscilla Antony S[3]

[1]Undergraduate student Saveetha Dental College and Hospitals Saveetha Institute of Medical and Technical Science (SIMATS) Saveetha University, Chennai, India.
[2*]Tutor Department of Conservative dentistry and Endodontics Saveetha Dental College and Hospitals Saveetha Institute of Medical and Technical Science (SIMATS) Saveetha University, Chennai, India.
[3]Reader Department of Conservative dentistry and Endodontics Saveetha Dental College and Hospitals Saveetha Institute of Medical and Technical Science (SIMATS) Saveetha University, Chennai, India .

Corresponding author: [2*]Dr. J. Lakshmi Prabha
Tutor Department of Conservative dentistry and Endodontics Saveetha Dental College and Hospitals Saveetha Institute of Medical and Technical Science (SIMATS) Saveetha University, Chennai, India.
[3]lakshmiprabhaj.sdc@saveetha.com

Email: [1]hanishd72@gmail.com, [2*]delphine.sdc@saveetha.com

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ABSTRACT:

Introduction This retrospective analysis investigates the relationship between age, gender, and the utilization of non-vital bleaching in dental patients. By examining a large dataset of individuals who underwent this cosmetic dental treatment, the study aims to uncover patterns and trends in age and gender preferences. Understanding whether certain age groups or genders are more likely to seek non- vital bleaching can provide valuable insights for dental professionals and contribute to treatment planning and patient counseling.

Aim & Objective Retrospective analysis of the teeth that were treated for non-vital bleaching in relation to age and gender.

Materials & Methods: Materials: Retrospective dental records, patient demographics, bleaching agents.

Methods: Collect records of non-vital bleaching cases. Categorize by age and gender. Analyze outcomes, considering factors like tooth structure and discoloration etiology. Utilize statistical methods to identify trends. Review and compare different bleaching agents used. Ensure ethical compliance and patient confidentiality throughout the study.

Result: Male patients exhibit a higher susceptibility to non-vital bleaching, particularly affecting the maxillary left central incisor, followed by the maxillary right central incisor. The predominant recipients of this treatment fall within the 26-40 age group, with the 18-25 age group ranking second. In summary, non-vital bleaching predominantly targets anterior maxillary teeth in these demographics.

Conclusion: In conclusion, understanding age-related responsiveness and gender-specific factors is pivotal for optimizing non-vital bleaching outcomes. Personalized approaches considering these nuances will enhance the effectiveness and satisfaction of dental treatments.

Keywords: Non-vital bleaching, Age-related variations, Gender-specific factors, Dental discoloration, Personalized treatment

1. INTRODUCTION

The goal of non-vital bleaching, commonly referred to as internal bleaching, is to make discolored teeth that have had root canal therapy look more attractive. This method involves directly applying a bleaching solution to the tooth's pulp chamber in order to lighten any internal discolorations and stains.[1] There is little research examining the relationship between age and gender and non-vital bleaching, despite the fact that it has become more and more popular as a conservative and minimally invasive method of improving the appearance of discolored teeth.[2]

The way one's teeth look has a significant impact on their social interactions and sense of self. Non-vital teeth may become discolored for a number of reasons, such as endodontic material deposition, internal resorption, or pulp necrosis.[3] For these cases, non-vital bleaching has shown to be an effective treatment option, though individual results may differ. Therefore, knowing how age, gender, and the results of non-vital bleaching are related can help dental professionals plan treatments and estimate the likelihood that they will be successful.[4]

The way teeth react to bleaching agents may be influenced by age-related changes in tooth structure. Age-related dentin sclerosis can interfere with bleaching agents' ability to effectively lighten tooth structure by preventing them from penetrating the tooth. [5] Additionally, the overall aesthetic outcome of non-vital bleaching procedures may be impacted by the increased translucency of dentin with aging. To adjust treatment strategies appropriately, it is imperative to look into whether age has a substantial impact on non-vital bleaching success rates and aesthetic results.[6]

Variations in dentin composition, enamel thickness, or tooth color related to gender may also affect how well non-vital bleaching works. Males are said to typically have darker teeth than females.[7] Understanding these gender-related variations in tooth color can help predict treatment success rates. These variations may have an impact on the outcome of non-vital bleaching. Furthermore, differences in dentin composition or enamel thickness between genders may impact the bleaching agents' capacity to penetrate internal stains and yield desired esthetic outcomes.[8]

The purpose of this retrospective analysis is to investigate the association between non-vital bleaching procedure outcomes and age and gender. We will evaluate the success rates, complications, and aesthetic gains made in various age groups and between males and females by looking back at a relevant dataset.[9] The dataset will contain demographic data about the patients, including age, gender, and the teeth that will be treated with non-vital bleaching. In addition, information will be gathered regarding the kind and strength of bleaching agents used, the length of the treatment, the location of the tooth, and any related problems.[10]

The results of this analysis may help physicians customize non-essential bleaching treatments for patients according to their age and gender. Forecasting success rates and controlling patient expectations can be made easier by being aware of how these factors affect treatment outcomes.[11] Furthermore, finding any gender- or age-related trends in treatment outcomes or side effects can help develop evidence-based recommendations for maximizing non-vital bleaching's benefits.[12]

It is significant to remember that there are inherent limitations to this retrospective analysis, including its dependence on pre-existing data and possible confounding variables. Nevertheless, the findings can still offer insightful information about how age, gender, and the results of non-vital bleaching treatments relate to one another.[13] The ultimate goal of this research is to improve treatment outcomes for patients seeking dental esthetic enhancements and to further our understanding of the factors influencing the effectiveness of non-vital bleaching.[14]

This study aims to retrospectively analyze non-vital bleaching utilization in dental patients concerning age and gender. Examining a substantial dataset of individuals who underwent this cosmetic dental procedure, we seek to determine age distribution, identify patterns, and assess gender differences. The investigation aims to pinpoint specific age groups inclined toward non-

vital bleaching and discern gender preferences. These insights are crucial for dental professionals, offering guidance in treatment planning and patient counseling based on demographic characteristics.

2. MATERIALS AND METHODS

The examination and analysis of past cases involving conservative reattachment in fractured teeth provide valuable insights into the efficacy and factors influencing the success of such procedures. The data, meticulously gathered from patient case records in the clinics of a Private Dental College, was systematically organized within an Excel sheet. This structured compilation allowed for a comprehensive exploration of various aspects related to conservative reattachment.

To conduct a robust analysis, the data underwent thorough examination through statistical tools, particularly utilizing SPSS software version 23. The statistical analysis aimed to discern patterns and correlations between the choice of materials employed in reattachment procedures and the overall success rates observed across cases. Understanding the relationship between the material used and the procedural outcomes is critical for refining protocols and optimizing conservative reattachment techniques.

The significance of this study lies in its potential to contribute evidence-based insights to the field of conservative reattachment. By evaluating a range of cases, practitioners can gain a nuanced understanding of which materials exhibit higher success rates, paving the way for informed decision-making in clinical settings. Furthermore, the utilization of SPSS software enhances the precision and reliability of the findings, ensuring that the statistical analysis is robust and the results are indicative of broader trends within the dataset.

The meticulous review and statistical analysis of fractured teeth reattachment cases from a Private Dental College's clinics offer a comprehensive exploration of the relationship between materials used and the success of conservative reattachment procedures. This research contributes to the ongoing enhancement of dental practices by providing evidence-based insights for practitioners and educators alike.

3. RESULT

Based on the results, it can be interpreted that male patients are more prone than females as seen in both the graphs . The most predominant tooth is maxillary left central incisor which was treated for non vital bleaching in the affected individuals, consequently maxillary right central incisor is the second highest tooth treated for non vital bleaching (as given in table 1). With this we can conclude that the anterior maxillary tooth are the major ones which undergo non vital bleaching predominantly.
The next graph segregated according to the age group it is seen that the age group around 26-40 are the people who undergo non vital bleaching predominantly followed by age group 18-25 shown in the second graph (as given in table 2).

		TOOTH NUMBER										TOTAL
		11	12	13	21	22	23	31	32	33	41	
GENDER	Male	115	12	0	144	24	1	7	2	0	9	314

	Female	**80**	**6**	**1**	**80**	**4**	**1**	**2**	**0**	**1**	**3**	**178**
Total		**195**	**18**	**1**	**224**	**28**	**2**	**9**	**2**	**1**	**12**	**492**

Table 1: Total patients of 492, 314 male and 178 females. This is segregated according to the tooth the patients have been treated with non-vital bleaching.

Chi- square Tests			
	Value	df	Asymptomatic significance (2 sided)
Pearson chi square	14.116^a	9	0.118
Likelihood association	16.287	9	0.061
Liner by linear association	4.457	1	0.035
N of valid cases	492		
a. 10 cells [50.0%] have expected count less than 5. The minimum expected count is 0.36.			

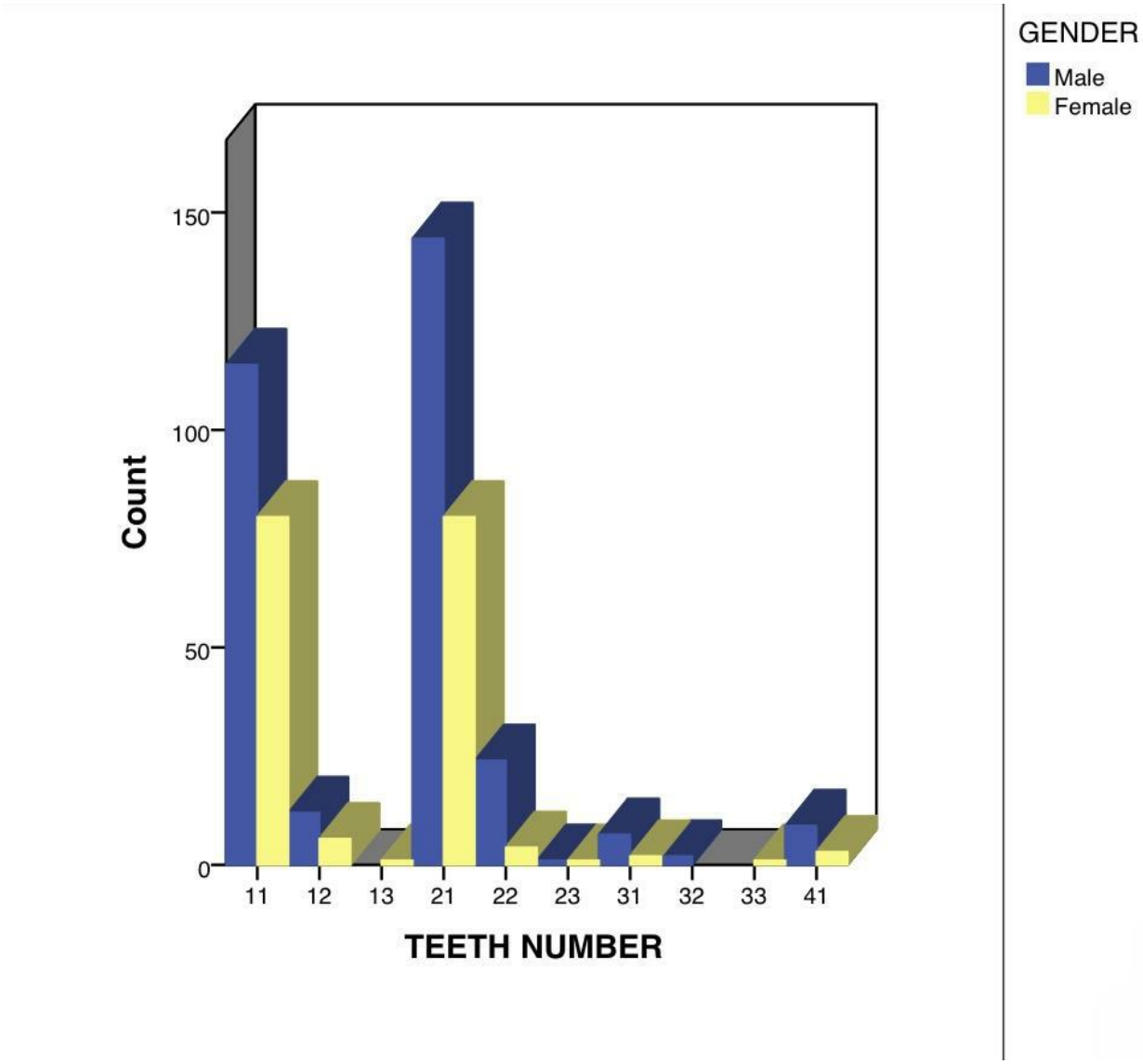
Table 1 - chi square analysis

		Teeth Number										Total
		11	12	13	21	22	23	31	32	33	41	
AGE	Age 18-25	78	6	0	93	7	1	4	1	0	3	193
	Age 26-40	93	10	0	109	15	0	3	1	0	6	237
	Age 41-55	23	2	1	22	6	1	2	0	1	2	60
	Age >55	1	0	0	0	0	0	0	0	0	1	2
Total		195	18	1	224	28	2	9	2	1	12	492

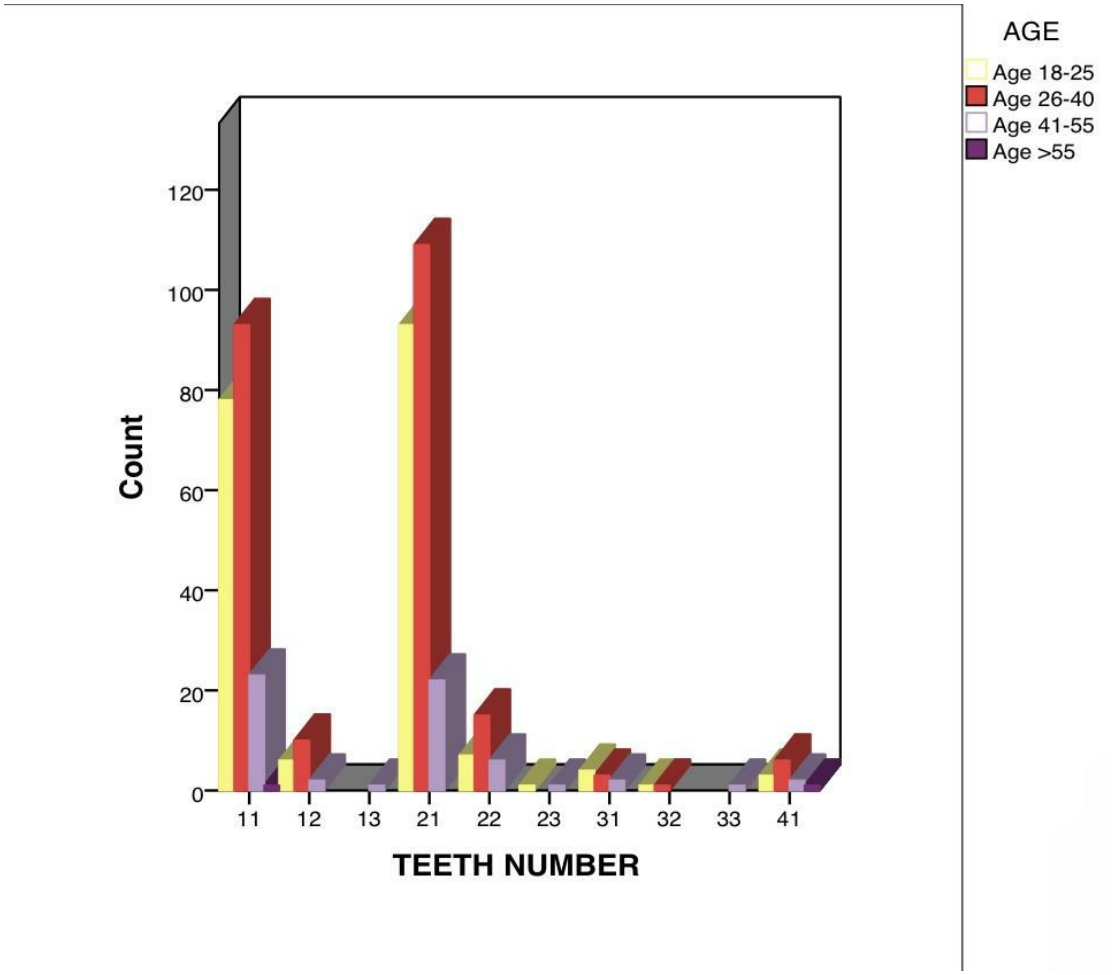
Table 2: Here , the number of patients treated with non vital bleaching are segregated according to their age and the tooth number which is treated .

Chi- square Tests			
	Value	df	Asymptomatic significance (2 sided)
Pearson chi square	45.227^a	27	0.015
Likelihood association	26.03	27	0.517
Liner by linear association	1.815	1	0.178
N of valid cases	492		
a. 29 cells [72.5%] have expected count less than 5. The minimum expected count is 0.00.			

Table 3 - chi square analysis
Table 3 shows the chi square analysis



Graph 3: Bar graph depicting the tooth number and Gender



Graph 4: Bar graph depicting the tooth number and Age

Table 1 - Tooth number and Gender and subsequent chi square test.
Table 2 - Tooth number and Age and subsequent chi square test.
Graph 3 - Bar graph depicting the tooth number and Gender.
Graph 4 - Bar graph depicting the tooth number and Age.

4. DISCUSSION

There were 492 patients in the study, 314 of whom were men and 178 were women. The age of the patients and the teeth that had received non-vital bleaching were used to categorize them. In situations where the tooth pulp is not essential, this process enables tooth whitening.

The study's analysis of the gender distribution revealed a greater percentage of men than women. There could be a number of reasons for this gender disparity, including lifestyle decisions, genetic predispositions, and dental hygiene habits.

The utilization of an age-based tooth numbering system facilitated the categorization and examination of non-vital bleaching results at various life stages. This method can shed light on the procedure's efficacy and how it affects teeth of different ages.

The study's conclusions showed that different age groups experienced differing degrees of tooth whitening as a result of non-vital bleaching. In comparison to older patients, younger patients typically experienced more noticeable outcomes. Tooth structure, enamel thickness, and the existence of dental restorations are a few possible causes of this.

The study also emphasized how crucial it is to evaluate non-vital bleaching outcomes not only visually but also by taking patient satisfaction and any possible side effects—like gum irritation or tooth sensitivity—into account.

An insightful look at the patterns and factors surrounding non-vital bleaching can be gained from a retrospective analysis of teeth treated for this dental procedure based on age and gender.[15] The process of non-vital bleaching, sometimes referred to as internal or walking bleach, is used to treat discoloration in teeth that have had root canal therapy. As we go deeper into the conversation, it becomes clear that gender and age have a big impact on the trends and results of non-vital bleaching treatments.[16]

First, it is evident that age has a major impact on the response to non-vital bleaching as well as its effectiveness. Because the bleaching agents usually have a more favorable effect on younger patients' teeth, younger patients usually experience better results. This makes sense because factors like dentin and enamel thickness can affect how well the bleaching agents penetrate.[17] Furthermore, younger individuals might have fewer intrinsic stains, making the bleaching process more effective on them.[18] It is important to keep in mind that every person is different, and that lifestyle choices and overall dental health can also affect how effective non-vital bleaching is for different age groups.[19]

On the other hand, gender differences give the retrospective analysis an intriguing new angle. According to research, a person's gender may affect how sensitive their teeth are to discoloration and how they respond to bleaching.[20] Differences in male and female hormones, food, and oral hygiene habits can all contribute to different patterns of tooth discoloration.[21] Understanding the subtle differences between the sexes is important when tailoring non-essential bleaching procedures to meet specific needs and optimize results.[22]

The retrospective analysis also makes clear how important it is to consider gender and age when figuring out the cause of tooth discolouration. Although some cases may be attributed to intrinsic factors, such as pulpal bleeding during root canal treatment, extrinsic factors, such as medication use, smoking, and dietary choices, can also have an impact on a case.[23] The composition and structure of dentin can alter with age, adding complexity to the etiological landscape. A full understanding of these factors is necessary to develop customized treatment plans and manage patients.[24]

Similar studies on dental treatments often examine factors such as tooth discoloration, treatment efficacy, and patient demographics. For instance, investigations into teeth whitening procedures, both vital and non-vital, frequently consider age, gender, and the type of staining. Comparative analyses across these studies provide a comprehensive understanding of how different variables impact dental interventions, guiding practitioners toward more personalized and effective treatments. Such comparisons contribute to the ongoing refinement of dental practices and patient care protocols.[25]

5. CONCLUSION

The intricate relationships between gender and age in non-vital bleaching outcomes are highlighted in the retrospective analysis's conclusion. In younger age groups, tooth discolouration patterns are more nuanced and reactions are generally more positive. Factors particular to gender also play a role in this. It is necessary to comprehend these dynamics in order to develop customized, successful treatment plans. As dental practices evolve,

understanding age- and gender-related differences will be essential to enhancing non-vital bleaching protocols and ensuring patient satisfaction and optimal results.

FUTURE SCOPE OF REFERENCE

Improvements in dental materials and technologies may lead to more targeted and efficient bleaching protocols due to age-specific variations in tooth structure. Further research into gender-related variables, such as the effects of hormones, may improve treatment strategies. It would be highly advantageous to conduct extended studies assessing the long-term feasibility and potential negative effects of non-vital bleaching in a variety of demographic groups. Incorporating the patient's reported preferences and outcomes can further enhance the patient-centered approach. Further research in these areas will lead to further evolution of non-vital bleaching techniques.

CONFLICT OF INTEREST

No conflict of interest

AUTHOR CONTRIBUTION

All author have equally contributed to the research

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Apoorva Dental Health Care
UB Road Kadur , Chikmagalur district
577548

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6. REFERENCES

1. 1 Abbott, Paul, And S. Y. S. Heah. "Internal Bleaching Of Teeth: An Analysis Of 255 Teeth." Australian Dental Journal 54.4 (2009): 326-333.
2. 2 Rezende, Márcia, Et Al. "Predictive Factors On The Efficacy And Risk/Intensity Of Tooth Sensitivity Of Dental Bleaching: A Multi Regression And Logistic Analysis." Journal Of Dentistry 45 (2016): 1-6.
3. 3 Correia, Ayla, Et Al. "Clinical Performance Of Whitening On Devitalized Teeth: A Retrospective Observational Study." Brazilian Dental Science 23.1 (2020): 7-P.
4. 4 Periyasamy, Y. A. S. H. I. L. A., D. E. E. P. A. K. Selvam, And S. U. B. H. A. S. H. I. N. I. Chandrasekar. "Association Between Age And Gender Of Patients Underwent Tooth Whitening Procedure." Journal Of Contemporary Issues In Business And Government 27.2 (2021): 572.
5. 5 Deshmukh, Madhura, And Nabeel Ahmed. "Evaluation Of Initial Shade Of The Discoloured Non Vital Tooth Amongst Patients In Chennai-A Retrospective Study." International Journal Of Pharmaceutical Research (09752366) 13.1 (2021).
6. 6 Nivedhitha, M. S., Mahesh Ramakrishnan, And Dhanraj Ganapathy. "Non-Vital Bleaching Done In Discoloured Maxillary Central Incisors." Annals Of Rscb 25.4 (2021): 15639-15650.

7. 7 Pillay, Sarojini Ramya, Surendar Sugumaran, And Remmiya Varghese. "Preference And Frequency Of Commonly Performed Bleaching Techniques." International Journal Of Pharmaceutical Research (09752366) (2020).
8. 8 Maran, Bianca Medeiros, Et Al. "Tooth Sensitivity With A Desensitizing-Containing At-Home Bleaching Gel—A Randomized Triple-Blind Clinical Trial." Journal Of Dentistry 72 (2018): 64-70.
9. 9 Leonard Jr, Ralph H., Et Al. "Evaluation Of Side Effects And Patients' Perceptions During Tooth Bleaching." Journal Of Esthetic And Restorative Dentistry 19.6 (2007): 355-364.
10. 10 Khoroushi, Maryam, Amineh Hasankhani, And Hesam Mirmohammadi. "Inside-Outside Bleaching Of Endodontically Treated Teeth: An In Vivo Study." Scientific Literature Dentistry(2020): 1-7.
11. 11 Algarni, Amnah A., Et Al. "Trend-Analysis Of Dental Hard-Tissue Conditions As Function Of Tooth Age." Journal Of Dentistry 74 (2018): 107-112.
12. 12 Soares, Adriana J., Et Al. "Frequency Of Root Resorption Following Trauma To Permanent Teeth." Journal Of Oral Science57.2 (2015): 73-78.
13. 13 Holan, Gideon, Munaya Abu Rahme, And Diana Ram. "Parents' Attitude Toward Their Children's Appearance In The Case Of Esthetic Defects Of The Anterior Primary Teeth." Journal Of Clinical Pediatric Dentistry 34.2 (2009): 141-145.
14. 14 Torabinejad, Mahmoud, Masoud Parirokh, And Paul Mh Dummer. "Mineral Trioxide Aggregate And Other Bioactive Endodontic Cements: An Updated Overview–Part Ii: Other Clinical Applications And Complications." International Endodontic Journal 51.3 (2018): 284-317.
15. 15 Alex, Aleena, And Hima Sandeep. "Knowledge Attitude And Practice Survey On Non-Vital Bleaching Among Dental Practitioners And Specialists." Journal Of Pharmaceutical Negative Results (2022): 1422-1427.
16. 16 Hull, Troy E., Et Al. "Patterns Of Endodontic Care For A Washington State Population." Journal Of Endodontics 29.9 (2003): 553-556.
17. 17 Haywood, Van B., And Anthony J. Diangelis. "Bleaching The Single Dark Tooth." Inside Dent 6.8 (2010): 42-52.
18. 18 Liang, H., E. J. Burkes, And N. L. Frederiksen. "Multiple Idiopathic Cervical Root Resorption: Systematic Review And Report Of Four Cases." Dentomaxillofacial Radiology 32.3 (2003): 150-155.
19. 19 Khan, Haris, Et Al. "Bracket Failure In Orthodontic Patients: The Incidence And The Influence Of Different Factors." Biomed Research International 2022 (2022).
20. 20 Dar, Saira Yousuf, M. Bader Munir, And Salman Rashid. "An Assessment Of The Retention Of Anterior Composite Restorations-A 5 Years Clinical Study." Pakistan Oral & Dental Journal 37.2 (2017).
21. 21 Rangeela, M., And Kavalipurapu Venkata Teja. "Gender, Age And Demographic Related Data In Patients Presenting With Fluorosis For Vital Bleaching In University Setup." Nveo-Natural Volatiles & Essential Oils Journal| Nveo(2021): 6268-6278.
22. 22 Pooja, J. Chandra, Dr Padma Ariga, And Dr Ganesh Jeevanandan. "Aesthetic Management Of Anterior Discolouration Of Teeth-An Institution Based Retrospective Study." Journal Of Contemporary Issues In Business And Government| Vol 26.2 (2020): 332.
23. 23 Pillay, Sarojini Ramya, Surendar Sugumaran, And Remmiya Varghese. "Preference And Frequency Of Commonly Performed Bleaching Techniques." International Journal Of Pharmaceutical Research (09752366) (2020).

24. 24 Ranjith Raj, V. P. R. B., And Adimulapu Hima Sandeep. "Assessment Of Etiological Factors Associated To Anterior Class Iv Restorations-A University Based Study." Specialusis Ugdymas 1.43 (2022): 10353-10363.
25. 25 Raj, Ranjith, And Adimulapu Hima Sandeep. "Assessment Of Etiological Factors Associated To Anterior Class Iv Restorations-A University Based Study." Special Education1.43 (2022).