EVALUATION OF CLINICAL FACTORS RELATED TO VITAL BLEACHING AND ITS OUTCOME- A RETROSPECTIVE STUDY

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ABSTRACT

Introduction: Currently, there are a number of tooth bleaching techniques available to clinicians. Home bleaching and in-office bleaching are widely used in dental practice.1–2 One of the advantages of home bleaching has been reported to be its efficacy, which is readily noticed favorably by patients.This study compared the clinical outcome of bleaching techniques in vital teeth.The increasing demand for a better appearance and whiter smile, has made vital tooth-bleaching a popular dental procedure. It has developed into one of the fastest growing areas of aesthetic dentistry. **Materials and Method:** A data collection of sample 65 patients belonging to different age group, who have undergone tooth bleaching was collected from Saveetha dental college. The datas were entered in the excel sheet.Graphs were prepared based on the criterias such as reason for bleaching, technique used for bleaching, and which tooth bleaching was done frequently and also the outcome of bleaching. Using SPSS software version 21 the results were analysed. Chi square test was done. **Results:** Majority of the patients were satisfied with the outcome of bleaching but 24.62% of the patients were not satisfied with the outcome.Mostly there were more males compared to females. Males and females both had different reasons to do bleaching in which fluorosis was the main reason in both males and females. There was no significant difference ($p>0.05$) elicited in the outcome. **Conclusion:** It is evident that fluorosis is the main reason for patients to undergo vital bleaching.Majority of them underwent bleaching in upper anteriors and lasser activated technique was popular among patients.Therefore Based on the results it can be concluded that most of the patients who did vital bleaching were satisfied.

Keywords: Vital bleaching, patients, outcome, satisfaction, effectiveness, Awareness, knowledge, innovative technique

INTRODUCTION

The history of dentistry is comprised of many efforts undertaken to achieve an effective tooth whitening method.Vital tooth were bleached as early as 1868,by means of oxalic acid or pyrozone and later with hydrogen peroxide in 1911.In late 1960s ,a successful home bleaching technique was established.Now the bleaching technique uses different

concentrations of hydrogen peroxide.The appearance of tooth can change due to many factors.Tooth bleaching must be done only after the cause of the discoloration is assessed.Discolouration may be extrinsic or intrinsic.Extrinsic stains result from the accumulation of chromogenic substances in the external tooth surface.Intrinsic stains are usually caused by deeper internal stains or enamel defects.Bleaching agents contain both active and inactive ingredients.(1)

Tooth whitening is a very complex process that depends on several factors such as pH of the bleaching agent ,method of application and thickness of the bleaching agent to the enamel,fluctuation of irradiation,length of photoactivation,tooth size,selective absorption of the wavelength of irradiation. (2).There are various tooth whitening products available, such as, dentifrices, mouth rinses, strips, whitening dental floss, toothbrushes, and paint-on gels or film activated charcoal, oil pulling, etc.(3)

In the developed world patients are placing strong interest on aesthetics.The increasing demand for a better appearance and whiter smile, has made vital tooth-bleaching a popular dental procedure.(4)It has developed into one of the fastest growing areas of aesthetic dentistry. It provides a more conservative treatment approach for discoloured teeth as compared to other restorative treatment modalities such as composite fillings, veneers or crowns.(5).Due to the aesthetic reason ,increasing number of oral care products also (sometimes mainly) focus on teeth whitening. Lifestyle habits like smoking or consumption of red wine or black tea can lead to darker teeth. Also, the tooth color in general depends on the tooth age.(6).For some patients, sensitivity and discomfort follow vital tooth bleaching.Light increases the risk of tooth sensitivity during in-office bleaching, and light may not improve the bleaching effect when high concentrations of hydrogen peroxide (25–35%) are employed.(7) Therefore, dentists should use the light-activated system with great caution or avoid its use altogether.(8)

The majority of current and past research and literature indicates that the current use of a 10% carbamide peroxide solution in the method advocated for bleaching vital teeth is apparently safe when administered properly under the supervision of a dentist.(9).This study is limited to a small population.Our team has extensive knowledge and research experience that has translate into high quality publications(10–19),(20–23),(24–28) (29)The aim of this study is to evaluate the clinical factors related to vital bleaching and its outcome.

MATERIALS AND METHOD

Study setting: The current study is an institutional-based retrospective study performed in the private dental College.

Ethical Approval

Approval for the study is received from the scientific review board.

The sample size of the study was 60 and those who were involved in the study were of different age groups who wanted to do vital bleaching.

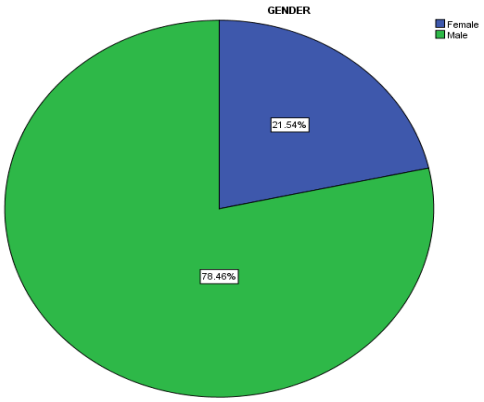
To minimise sampling bias -simple random sampling was done

Data Collection and tabulation

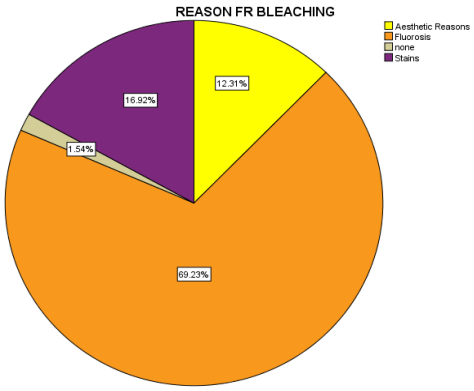
All the case records and treatment records were obtained from patient management software and data collected was cross verified by an examiner to avoid any missing case records .A total of 65 case sheets were verified for vital bleaching. All the data collected was formulated and tabulated in excel and results were analyzed using SPSS.

All the outcomes were put into graphs and comparative graphs are made between males and females. The statistical test used is SPSS Software, estimating the independent variables to be height and weight, and dependent variables to be type of materials and gender.

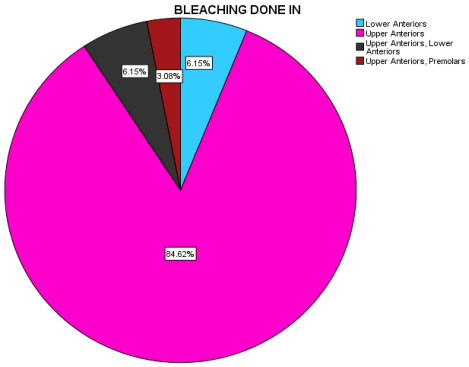
RESULTS



Pie chart 1: The pie chart represents the gender of the patients. 78.46% were male(green) and 21.54% were female.



Pie chart 2: The above pie chart represents the reason for bleaching.12.31% did bleaching for aesthetic reasons(yellow),69.23% did bleaching due to fluorosis(orange),16.92% did bleaching due to stains(purple)and 1.69% had no reason(cream colour)for bleaching their tooth.



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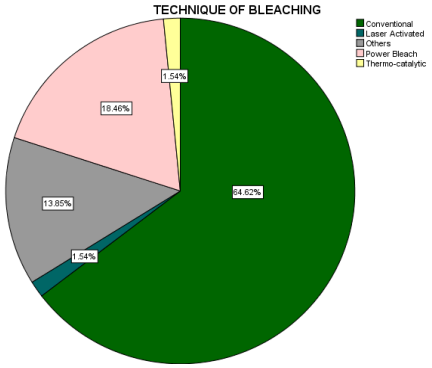
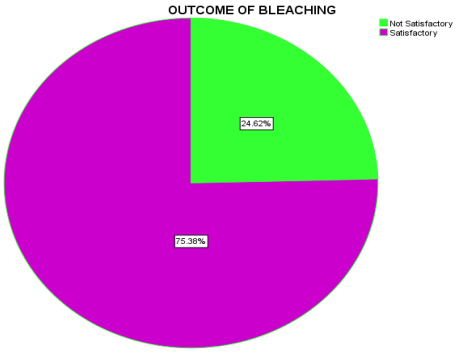
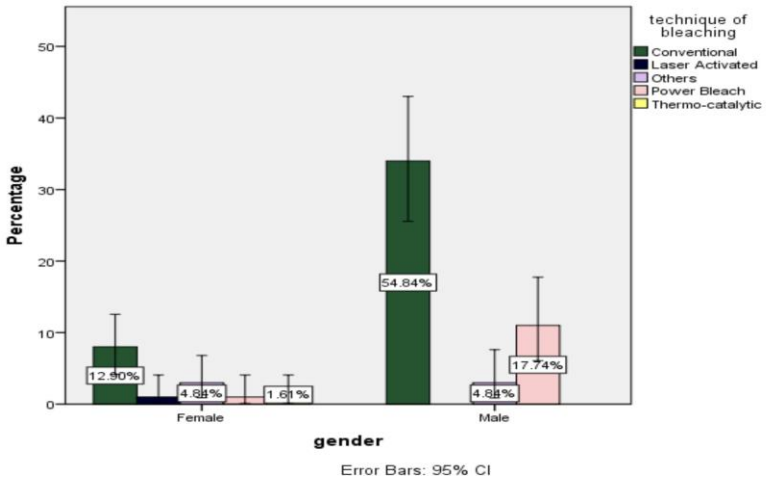
Pie chart 3: The pie chart represents which tooth bleaching was done in.Mostly bleaching was done in upper anteriors that is 84.62%(pink),6.15% of bleaching was done in lower anteriors(light blue),5.15% of bleaching was done in both upper and lower anteriors(black) and 3.08%did bleaching in upper anteriors and premolars(brown).



Pie chart 4: The pie chart represents the technique of bleaching done.For 64.62% of the patients conventional method was used(dark green),for 18.46% of the patients Power bleaching was done(light pink),for 1.56% of the patients laser activated bleaching was done(dark blue),thermocatalytic method was used for 1.56% of the patients(light yellow) and other methods were used for 13.83% o the patients(grey).



Pie chart 5: The piechart represents the outcome of bleaching.75.38% of the patients were satisfied with the outcome of bleaching(light purple) 24.62%of the patients were not satisfied(light green)



Bar chart 1: Bar graph showing the association of responses based on different gender of patients and to technique of bleaching used.X axis represents the gender and the Y axis represents the number of patients.Out of the 60 patients 54.84% of the male patients thought that conventional method was used more frequently and 12.90% of female thought that conventional method was a better technique of bleaching.Chi square test was done and the association was found to be statistically significant.(P value<0.05) that is 0.038.

DISCUSSION

In this study,based on the data collected 78.46% of the patients were male and 21.54% were female.(pie chart 1)Majority of the patients did tooth bleaching due to fluorosis.16.92% of the patients did tooth bleaching due to stains.(pie chart 2)Mostly bleaching was done in upper anteriors that is 64.62%.Bleaching was rarely in lower anteriors.(pie chart 3)Various techniques have been used for bleaching teeth.Conventional bleaching was more preferred by the dentists compared to other techniques.Powder bleach technique was also done for 18.46% of patients.(pie chart 4).Majority of the patients were satisfied with the outcome of bleaching but 24.62% of the patients were not satisfied with the outcome.(pie chart 5)Both male and female did bleaching due to fluorosis,also more males did bleaching due to stains compared to females.Power bleach technique was done to more males compared to females.(bar graph 1).

In previous studies,vital tooth bleaching has been found to be effective, however, relapse does occur. The literature suggests that bleaching agents may have transient effects on the tooth itself, and may affect some dental materials.(30))(31)These results are similar to that of the present study as most of the patients were satisfied with the outcome.In vitro and in vivo studies, mostly comparing different bleaching systems, have demonstrated the efficacy of vital and non-vital tooth bleaching.(32)Bleaching treatments are affected by a number of factors including the actual cause of tooth discoloration.(33)Many articles have proved many patients were willing to do vital bleaching due to staining as the major factor.(34)Unlike the previous studies,in the present study mostly bleaching was done due to fluorosis.(35) When comparing the three systems, the results of the previous study

showed no statistically significant difference between the different bleaching techniques concerning the overall color change in all tested periods.(36) Unlike the previous studies colour changes were not observed and mostly the outcome of bleaching that is satisfaction of the patients was considered.(37)Wide range of bleaching techniques were done for patients similar to the data collected in the present study.(38)A previous article concluded that conventional technique was used most frequently which was similar to the present study.(39)Also various articles have proved that bleaching is equally done for both male and female unlike the present study.(40)

This study was conducted to check whether vital bleaching was effective and to know about various techniques.The limitation of the study was that it constitutes a very small sample size which may lead to errors in the study.The data was collected only from one college which can lead to different opinions if taken from different colleges. There might be errors in the data collected. Males and females were not equal which can also lead to different types of errors. Further studies can be done to increase the use of vital bleaching.As new techniques can be introduced for better satisfaction among patients which are long lasting and easier to do in the perspective of dentists.

CONCLUSION

Within the limits of the study due to the results it can be concluded that vital bleaching is effective. It shows a good outcome but can also lead to unsatisfactory results at times. This study also proves that conventional techniques are used more commonly.As the study involves a very small sample size as well as only concentrates on only few clinical factors further studies can be done with a vast population with knowledge of many other factors.

AUTHOR CONTRIBUTION

Pravalika. A: Literature search, data collection, analysis, manuscript writing
Dr Adimulapu Hima Sandeep : Data verification, manuscript drafting

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CONFLICT OF INTEREST: The author declares that there is no conflict of interest in the present study.

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