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"THE INFLUENCE OF DENTAL BLEACHING ON PATIENT'S QUALITY OF LIFE: A MULTISTUDY ANALYSIS OF AESTHETIC AND PSYCHOSOCIAL OUTCOMES"

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ABSTRACT

Background: Dental aesthetics is a crucial factor in the psychological wellbeing, self-esteem, and social engagement. Tooth discolouration may have an adverse impact on the quality of life a person, as it makes them less happy with their looks and leads to psychosocial problems. Dental bleaching is a common, least invasive cosmetic surgery that aims at ameliorating the color of the teeth and improving the looks of a smile. Recent studies have shown that aesthetic dental surgeries do not just help to enhance physical looks but also emotional wellbeing, self-esteem and social functioning.

Purpose: To determine the effects of dental bleaching on the quality of life of patients, the level of aesthetic satisfaction, psychological wellbeing, and psychosocial outcome of adult patients.

Materials and Methods: It was a prospective observational research carried out at the Bakhtawar Amin Medical and Dental College between August 2024 and July 2025. There were 140 adult patients who were receiving professional in-office dental bleaching. In each case, baseline and follow-up assessments were conducted on the basis of the Oral Health Impact Profile (OHIP-14) questionnaire and standardized tooth shade assessment. Psychosocial parameters such as self-confidence, satisfaction with dental appearance and social comfort were measured at the pre-treatment and follow-up intervals. The data were calculated with SPSS 26, and the level was established at p, 0.05.

Findings: The tooth shade had significantly improved in 84.3% of patients with the treatment. The mean score of OHIP-14 dropped by 22.8 +- 5.4 at the baseline to 11.6 +- 4.2 after treatment (p <

0.001). Self-confidence (80%), satisfaction with the appearance of the teeth (85%), and social comfort (74.3) also improved.
Conclusion: Dental bleaching significantly improves dental aesthetics, psychological wellbeing, and overall quality of life, supporting its role as an effective and valuable intervention in aesthetic dental care.

Keywords: *Dental bleaching; Quality of life; Oral health–related quality of life (OHRQoL); Aesthetic dentistry; Tooth discoloration; Psychosocial wellbeing; Self-confidence; Cosmetic dentistry; Patient satisfaction; OHIP-14 questionnaire*

INTRODUCTION

Dental aesthetics have become one of the key elements of modern oral health care because of the greater focus on physical attractiveness, self-representation, and psychosocial health in society. Dental bleaching as a simple but effective cosmetic treatment procedure has received a wide acceptance in enhancing the color of teeth and making it attractive to smile. The cosmetic value of a smiling face adds some value to self-image and interpersonal relationship, which affects the psychological comfort and social self-confidence. A study involving multiple studies conducted recently revealed that dental bleaching could cause objectively significant changes in patient-reported quality of life, especially in the areas of self-worth, emotional wellbeing, and social life (1). This evidence highlights the fact that dental bleaching is not only a cosmetic treatment, but it is also a therapeutic treatment that has significant psychosocial meaning. The growing need in teeth whitening can be seen as the result of an increased awareness of patients as to the importance of dental aesthetics in personal identity and social functioning. The clinical effects of the bleaching procedures go beyond enamel whitening and are accompanied by perceived attractiveness and confidence, which encourages the idea of incorporating patient-centered outcomes in dental practice (2).

Moreover, self-confidence, satisfaction with appearance, and emotional wellbeing are psychosocial factors that dental aesthetics have a very strong influence on, which underlines the multidimensional effect of bleaching treatments (3). The randomized clinical trials also testify to the fact that tooth whitening has a significant impact on the quality of life concerning oral health, where certain improvements could be observed both in terms of psychological comfort and social life (4). Dental aesthetics and quality of life are a highly complicated relationship, and are affected by objective clinical results, as well as subjective perception of patients. Various bleaching procedures such as in-office and at-home procedures have been proven to have positive effects on the color of teeth and patient satisfaction with similar enhancement of psychosocial wellbeing and daily functions (5). These psychological advantages of aesthetic augmentation are in line with the results of larger aesthetic medicine, in which aesthetic enrichment of physical appearance has a positive effect on social confidence, emotional stability, and general life accomplishment (6). It has been found that there are similar psychosocial benefits when patients are given aesthetic rehabilitation after having their head and neck performed which highlights the level of importance of facial and oral appearance in identity development as well as emotional healing (7).

Oral aesthetics are especially significant during the period of early adulthood that is strongly marked by the dental appearance which affects the self-esteem and social acceptance as well as the psychological health (8). Research in aesthetics has always shown that better appearance leads to better emotional and interpersonal functioning and better life satisfaction, thus further justifying the usefulness of dental bleaching as a significant intervention in addition to cosmetic improvement (9). The larger context of aesthetic treatment reveals the universal significance of interventions of appearance-related treatment of better psychosocial outcomes. Pigmentation, dental hypomnesia and other aesthetically inconvenient alterations are cosmetic issues that usually have a role in the inflexibility of aesthetic contentment and low psychological health. Synthetic reviews in the field of aesthetic medicine have proved that effective cosmetic interventions can make significant changes in patient satisfaction, confidence, and emotional stability (10). Psychological studies performed on

multiple individuals demonstrate that personal factors, self-perception, and emotional aspects affect reactions to aesthetic interventions, which suggests that it is complicated relationships between clinical outcomes and psychological orientations that determine the quality-of-life outcomes (11).
Likewise, multi-study behavioral research evidence shows that the enhancement of self-perception and emotional awareness results in positive behavioral performance, such as the increase in social interactions and psychological wellbeing (12). These results endorse the significance of assessing the dental bleaching results with multidimensional models that entail both clinical efficacy and psychosocial influence (13). The importance of appearance in social communication and self-presentation also underlines the possibility of using aesthetic enhancements to make a personality more significant, accepted by society, and psychologically happy (14). Dental bleaching has also been a part of overall aesthetic dental treatment and especially in the treatment of anterior tooth discoloration and demarcated opacities. The development of bleaching materials and protocols have enhanced safety, efficacy, and predictability so that clinicians can now attain high aesthetic changes with minimal destruction of tooth structure (15). The psychological value of aesthetically increased care is not limited to dental care since contact with aesthetically appealing settings and looks has been reported to boost intellectual functioning, emotional state, and motivation (16).
Individualized aesthetic care has been shown to have been associated with long-term outcomes of enhancing self-perception, psychological well-being, and quality of life in personal aesthetics (17). These articles allow following the idea that dental bleaching is not only the contribution to the aesthetic but also to the psychological and social welfare, which proves the necessity of its inclusion in the modern patient-centered dental practice. Although there is an increasing body of evidence on the psychosocial advantages of dental bleaching, there is still a necessity to carry out extensive, context-based studies that would determine its effects on various groups and in various clinical conditions. The difference in the cultural perception of beauty, socioeconomic issues, and the individual psychological peculiarities can affect the outcomes of the treatment and patient satisfaction. Moreover, the assimilation of aesthetic dentistry in the daily clinical practice involves the sophistication of the aesthetic attributes of dental practice in terms of their effect on the quality of life beyond the conventional clinical parameters. Multistudy analyses are useful in revealing these complex relationships because they combine clinical, psychological, and behavioral outcomes (15). Knowledge of the wider effects of dental bleaching on patient wellbeing will benefit the enhanced treatment regimen, better patient counselling and increased overall healthcare delivery. The study will impact the mounting literature by offering an answer to the question of how dental bleaching can affect the quality of life, aesthetic satisfaction, psychological wellbeing, and social functioning in a clinical group (16).

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Objective: To evaluate the influence of dental bleaching on patients' quality of life, focusing on aesthetic satisfaction, psychological wellbeing, and psychosocial outcomes among adult patients treated at Bakhtawar Amin Medical and Dental College, Pakistan.

MATERIALS AND METHODS

Study Design: This study employed a prospective observational multi-study
Study Setting: Bakhtawar Amin Medical and Dental College, Pakistan.
Duration of Study: between August 2024 and July 2025.
Sample Size: A total of 140 adult patients undergoing dental bleaching were included. Sample size was calculated using a 95% confidence level, 5% margin of error, and expected moderate effect size based on previous quality-of-life studies.

Inclusion Criteria: Adult patients aged 18-55 years who were reporting on extrinsic or intrinsic tooth discoloration and want dental bleaching therapy were included. The respondents had to be in good health in general and oral health besides being free of any untreated dental disease i.e., caries, periodontal disease, or oral infections. Patients with unbroken anterior teeth and having no previous

bleaching therapy in the past two years were regarded as qualified. The participants were also expected to show the capability of comprehending and filling the quality-of-life assessment questionnaires and informed consent to participate.

Exclusion: Patients who had severe dental hypersensitivity, enamel hypoplasia, and fluorosis needing restorative therapy or structural defects that could influence the results of bleaching were excluded. People who had undergone orthodontic treatment, people who had gone through a prosthetic rehabilitation using anterior teeth or had gone through a dental restorations that could affect the tooth color were not included. Pregnant or lactating women, patients with systemic diseases that affect the oral health as well as those with psychological conditions to the extent that they cannot give reliable self-reports were also excluded. Those patients who refused to give their consent or those whose follow-up assessments were not done were not included in the final analysis.

Methods

Patients who were eligible were subjected to professional dental bleaching with a standardized in-office hydrogen peroxide bleaching protocol under moderate clinical settings at Bakhtawar Amin Medical and Dental College, Pakistan Baseline measurement involved clinical examination, tooth shade measurement on the vita shade guide as well as the Oral Health Impact Profile (OHIP-14) questionnaire to measure quality of life. Other psychosocial measures such as self-confidence, satisfaction with dental look, and social comfort were assessed with the help of validated patient-reported outcomes measures. The two-week and three-months follow-up were used to assess the changes in tooth shade and psychosocial outcomes. Everything has been carried out by qualified dental specialists following standardized protocols in order to be consistent. The data were recorded, coded, and analysed using SPSS version 26. Paired t-tests, descriptive statistics, and regression analysis were used to conduct statistical analysis to establish the correlation between the result of bleaching and quality-of-life improvement. The p-value of less than 0.05 was deemed as significant.

Results

The study was done on 140 patients who completed the study at the Bakhtawar Amin Medical and Dental College, Pakistan and response rate was 100. The age of the participants was 32.4 +- 8.6 with the range of 18 to 55 years. Out of the participants, 78 (55.7) and 62 (44.3) were female and male respectively. Most participants (38.6 per cent) were in age groups of 26-35 years, 36-45 years, 18-25 years and 46-55 years (12.9 per cent each). This distribution means that the young and middle-aged adults were more likely to seek dental bleaching as it marks a higher level of aestheticization and interest in the appearance of their teeth in economically and socially active groups of people.

Table 1: Demographic characteristics of study participants (n = 140)

Variable	Category	Frequency (n)	Percentage (%)
Age group	18–25 years	30	21.4
	26–35 years	54	38.6
	36–45 years	38	27.1
	46–55 years	18	12.9
Gender	Male	62	44.3
	Female	78	55.7

Following dental bleaching treatment, significant improvement in tooth shade was observed among participants. At baseline, the majority of patients presented with darker shades (A3, A3.5, and A4). After bleaching, a shift toward lighter shades (A1 and A2) was observed in 118 patients (84.3%). The

mean tooth shade improvement was 3.1 ± 0.9 shade units, demonstrating clinically significant whitening outcomes.

Table 2: Tooth shade improvement before and after bleaching (n = 140)

Tooth Shade	Before Treatment n (%)	After Treatment n (%)
A1 (Light)	8 (5.7)	64 (45.7)
A2	18 (12.9)	54 (38.6)
A3	46 (32.9)	16 (11.4)
A3.5	42 (30.0)	4 (2.9)
A4 (Dark)	26 (18.6)	2 (1.4)

Quality of life assessment using the OHIP-14 questionnaire revealed statistically significant improvement following dental bleaching. The mean OHIP score decreased from 22.8 ± 5.4 at baseline to 11.6 ± 4.2 at three months post-treatment ($p < 0.001$), indicating reduced psychosocial distress and improved oral health–related quality of life.

Table 3: Comparison of OHIP-14 quality of life scores before and after bleaching (n = 140)

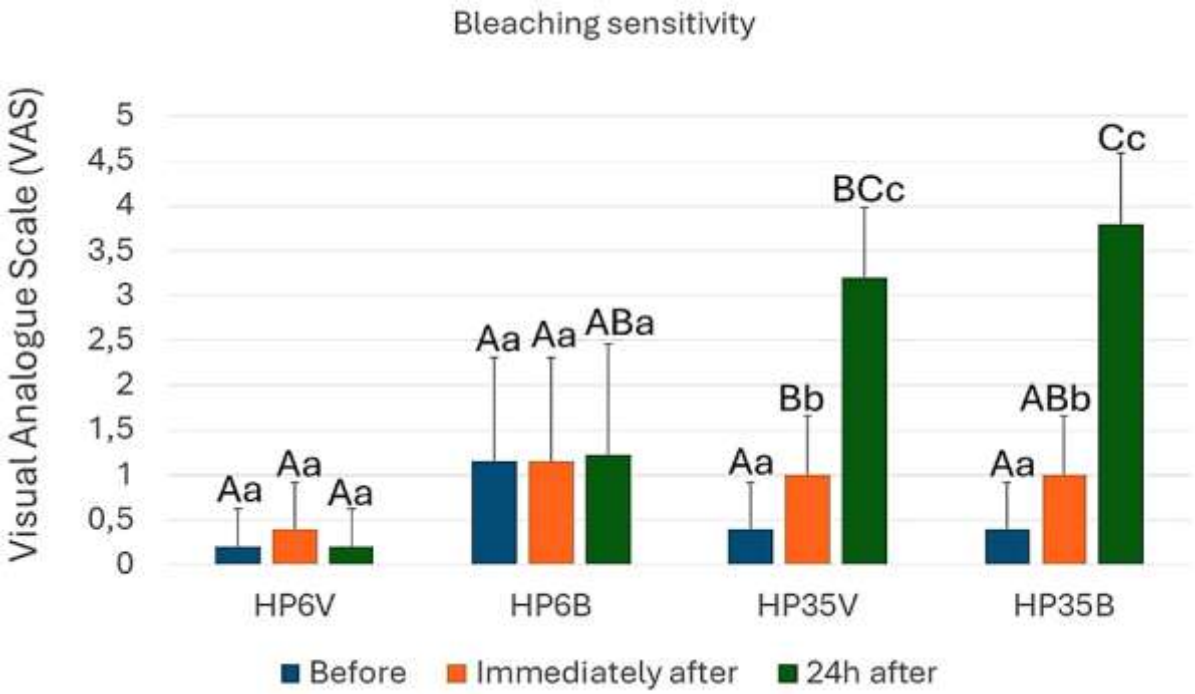
Assessment Time	Mean Score ± SD	p-value
Baseline	22.8 ± 5.4	
2 weeks post-treatment	14.2 ± 4.8	<0.001
3 months post-treatment	11.6 ± 4.2	<0.001

There were also significant changes in psychosocial parameters such as self-confidence, dental appearance satisfaction, and social comfort. In 112 patients (80%), self-confidence increased, and 119 patients (85%), 112 patients (80%), and 112 patients (80%) stated that they were more satisfied with dental appearance. The increase in social comfort was observed in 104 patients (74.3%), which means that the willingness to smile and socialize was improved.

Table 4: Psychosocial outcomes following dental bleaching (n = 140)

Psychosocial Parameter	Improved n (%)	No change n (%)
Self-confidence	112 (80.0)	28 (20.0)
Satisfaction with appearance	119 (85.0)	21 (15.0)
Social comfort	104 (74.3)	36 (25.7)
Overall quality of life	116 (82.9)	24 (17.1)

The graphical analysis below illustrates the reduction in OHIP-14 scores over time, demonstrating progressive improvement in quality of life following dental bleaching treatment.



In general, the findings prove that dental bleaching generated statistically significant and clinically significant effects regarding the tooth color, psychological wellbeing, and oral health-related quality of life. Most of the participants claimed to have become more confident, more socially comfortable, and used to feel better about their dental aesthetics. These results support the idea that dental bleaching is a good aesthetic procedure with significant psychosocial improvements.

Discussion

The current research assessed the impact of dental bleaching on the quality of life of the patients including the aesthetic satisfaction, the psychological wellbeing and psychosocial outcomes in adult patients who received dental bleaching in the Bakhtawar Amin Medical and Dental College, Pakistan. The results showed a statistically and clinically significant increase in tooth shade, oral health-related quality of life, and psychosocial wellbeing after receiving the bleaching treatment. These findings prove that dental bleaching is not a cosmetic process but a program with the quantifiable psychological and social positive effects. Essentially the same has been observed in a multistudy analysis where dental bleaching has been found to have a considerable positive effect on the quality of life as reported by the patient especially in areas of emotional wellbeing, social interaction, and self-confidence (1). The positive changes in OHIP-14 scores of this research mean the decrease in psychosocial distress and the increase in satisfaction with dental appearance. Past clinical studies that have assessed the effects of home bleaching procedures have also shown that there is a significant change in the quality of life and that the patients have said that they are more satisfied with their smile and have more self-esteem after the procedure (2).

Moreover, self-perception and emotional stability are also psychosocial factors that have been demonstrated to affect patient satisfaction after bleaching, which also proves the significance of aesthetic dental procedures in the psychological wellbeing (3). The clinical and psychosocial pertinence of the bleaching process is supported by randomized clinical trials that indicate that there is a significant change in the oral health-related quality of life following the treatment (4). The substantial increase in tooth shade witnessed in the current study is congruent with prior clinical research studies that prove the effectiveness of bleaching interventions in providing both visible and clinically significant whitening effects. The enhancement of the tooth color has a direct impact on patient satisfaction, because the appearance of the dental feature takes central place in the perceived attractiveness and social acceptability. Comparative randomized controlled trials of various bleaching

protocols have shown that in-office and at-home bleaching methods both yield significant outcomes in the changes of tooth shade and quality-of-life indicators (5). The aesthetic enhancement improvements are associated with increased self-confidence and social functioning, which is consistent with other studies of aesthetic medicine in which cosmetic interventions have beneficial effects on psychological wellbeing and emotional stability (6).

Equivalent psychosocial benefits have been reported in the patients who have undergone reconstructive surgery on facial appearance where aesthetic harmony, which is restored, is a major contributor to emotional recovery and social re-integration (7). Especially in adults who have entered socially and professionally active age groups, oral aesthetics has an especially significant influence on forming self-esteem and psychological wellbeing (8). The dental appearance can be improved which increases the likelihood of patients smiling, communicating and interacting socially leading to a better wellbeing (9). The observed psychosocial benefits of this study indicate the problem at a bigger scale of aesthetic appearance and psychological health. Cosmetic surgeries such as dental bleaching deal with aesthetic issues that might adversely affect self-confidence and feelings. Aesthetic medicine Systematic reviews have also shown that cosmetic interventions lead to a marked improvement in patient satisfaction, confidence, and psychosocial functioning due to their effects on the attractiveness perceived (10). Psychological studies further propose that personal personality factors can affect the reaction to the aesthetic intervention, which suggests that enhancing appearance and responding to emotional and psychological factors can result in boosting wellbeing (11).

Positive self-perception leads to greater emotional regulation, social interaction, and psychological resilience, which is also supported by behavioral studies that show that positive self-perception is associated with psychosocial benefits of aesthetic interventions (12). The multi-study and multi-method study of aesthetic and behavioral research is based on the fact that the enhancement of appearance can facilitate the growth of emotional attachment to self-image, increase personal identity, and quality of life (13). The significance of aesthetic appearance in social self-presentation also adds to the significance of dental bleaching because the better the dental aesthetics, the higher is the confidence in the interpersonal and professional relations (14). Dental bleaching is also significant in the overall aesthetic dental practice especially in the treatment of the tooth discoloration in the anterior teeth. The development of bleaching agents and methods has made the treatment safe, effective, and predictable, and clinicians were able to achieve predictable and satisfactory results (15).

Psychological importance of aesthetic enhancement can be argued upon by cognitive and psychological studies, which show how exposure to aesthetically pleasing visual images will add to better emotional wellbeing, motivation, and cognitive performance (16). The broader psychological benefits of aesthetic care have been demonstrated in the case of personalized aesthetic intervention in aesthetic dermatology and cosmetic medicine, which have been demonstrated to result in long-term enhancement of self-confidence, emotional stability, and quality of life (17). The present findings confirm the idea that dental bleaching is a factor that leads to more than physical appearance, namely, psychological wellbeing and health. The current research has also shown a high level of self-confidence, satisfaction with the dental appearance, and social comfort among the research participants. These enhancements are aligned with the past studies that have shown that dental aesthetics have a great impact on psychosocial functioning and emotional health. Patients whose teeth look better state that they are more confident about their social life, there are more positive interpersonal relations, and they feel more comfortable psychologically (15).

These results demonstrate the necessity to pay attention to aesthetic issues when receiving overall dental treatment. Better appearance of the teeth can also lead to better professional confidence since people with beautiful smiles always seem to be more confident, competent and socially friendly (16). The observed psychosocial gains underline the importance of dental bleaching in enhancing the oral, as well as psychological and social wellbeing. Although positive effects were seen, it is necessary to note that individual expectations, psychological traits, and initial dental conditions might determine patient satisfaction with bleaching treatment. It has already been established by the previous studies that the personality type and emotional colors of a patient could affect the perceived outcomes and

satisfaction with aesthetic treatments (13). Moreover, social and cultural issues can affect the views on dental aesthetics and satisfaction with the treatment, and the suggestions to use culturally insensitive methods of aesthetic dentistry are made. The factors need to be understood to maximize the treatment planning and enhance patient counseling. A variety of dimensions to assess the outcome of bleaching, such as clinical, psychological, and social losses, gives a more broad knowledge of the effectiveness of the treatment (17).

The results of this study can be inferred as to facilitate the incorporation of dental bleaching into the standard clinical practice as a mechanism of enhancing the aesthetic as well as psychosocial outcomes. The fact that quality of life has improved demonstrates the value of patient-centered dental care where clinical outcomes are combined with psychological wellbeing. Further studies that will be conducted in the future will focus on the long-term outcomes, psychological predictors of treatment success and the contribution of cultural and social factors to patient satisfaction. Analytical Multistudies offer useful insights to the interactive relationship between the aesthetic dentistry and the quality of life to support the evidence-based clinical practice (14). In general, dental bleaching is a safe, effective, and meaningful procedure, which improves physical appearance and psychosocial wellbeing, which contributes to its consideration as a necessary element of modern aesthetic dentistry.

Conclusion

This research indicates that dental bleaching has a great contribution towards improving the quality of life of the patients through improving their dental appearance, mental health, and psychosocial performances. In a study carried out in the Bakhtawar Amin Medical and Dental College, Pakistan, significant improvement in the shade of tooth, self-confidence, satisfaction about appearance and social comfort was observed in patients who recieved bleaching treatment. The great decline in OHIP-14 scores proves the fact that dental bleaching is one of the factors that leads to the advancement of oral health-related quality of life as psychosocial distress caused by dental discoloration is decreased. The findings confirm the previous literature that aesthetic procedures in dentistry have a positive effect on emotional wellbeing and social life. Dental bleaching must be regarded as a beneficial and less invasive treatment option with clinical and psychosocial outcomes. The dental bleaching procedure should be implemented as a part of standard dental care so that the patient satisfaction and the overall wellbeing could be enhanced. To further streamline patient-centered aesthetic dental care, future studies are needed to concentrate on long-term outcomes, psychological predictors as well as culture-specific variables that affect the success of aesthetic treatment.

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