

Original Article

The Effectiveness of LASIK Surgery Process Education and Guided Imagery on Anxiety and Emotional Self-Regulation among Female LASIK Candidates

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Abstract

Purpose: To examine the effectiveness of laser assisted in situ keratomileusis (LASIK) surgery process education and positive guided imagery in reducing anxiety and enhancing emotional self-regulation among female LASIK candidates.

Patients and Methods: The statistical population for this study consisted of female candidates for LASIK surgery at the operating room of Negah Eye Hospital, Tehran, Iran. A total of 30 participants were selected using convenience sampling over the course of one month and randomly assigned to either an experimental or a control group, with 15 participants in each group. Both the experimental and control groups completed the Athens Physical Activity Questionnaire (APAQ) and the Gross and John Emotion Regulation Questionnaires before the intervention. After completing these questionnaires, the experimental group received comprehensive training on the LASIK procedure, including detailed explanations of the surgical steps, followed by positive mental imagery exercises. The control group received only the standard preoperative instructions. Thirty minutes later, the APAQ was administered again to both groups, and the Gross and John Emotion Regulation Questionnaire was re-administered after surgery.

Results: LASIK surgery process education combined with positive guided imagery significantly reduced preoperative anxiety ($P = 0.035$) and improved postoperative emotional self-regulation ($P = 0.026$) among female LASIK candidates.

Conclusion: Education on the LASIK procedure and guided mental imagery effectively reduces preoperative anxiety and enhances postoperative emotional self-regulation among female patients undergoing this procedure.

Keywords: LASIK; Education; Anxiety; Emotional Self-Regulation.

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Introduction

One of the most common and correctable visual impairments worldwide is refractive error, with laser assisted in situ keratomileusis (LASIK) surgery being one of the most effective treatments. However, like many other medical procedures, LASIK surgery can induce anxiety and fear both before and after the operation ¹. Anxiety can weaken the immune system, increase susceptibility to infections, delay wound healing, and lead to unnecessary physical and psychological energy expenditure ². Preoperative factors such as unfamiliarity with the surgical environment and concerns about potential complications contribute to heightened anxiety and distress among patients. The activation of the catecholamine-cortisol pathway triggers a pro-inflammatory response, reduces cellular immunity, and delays recovery, ultimately lowering the postoperative pain threshold ³. These psychological and physiological effects can complicate the surgical process, resulting in potential re-treatments, cancellations of necessary post-surgical procedures, prolonged recovery, and significant financial and economic burdens ⁴.

A major cause of anxiety and stress is unfamiliarity with the procedure. Pain and anxiety are closely linked, often described as two sides of the same coin, with a direct relationship between them. Reducing anxiety strengthens the immune system, promoting faster recovery and lowering medical costs ^{5, 6}. Emotional regulation refers to the conscious or unconscious efforts individuals make to modify the type, intensity, duration, and expression of their emotional experiences ⁷. This is achieved through strategies such as reappraisal, rumination, suppression, self-disclosure, avoidance, and inhibition ⁷.

Guided imagery is a simple and cost-effective

method for reducing preoperative anxiety. It has been described as a mental process that uses imagination to enhance both physical and psychological well-being ⁸. It involves purposeful and deliberate visualization, where individuals imagine sights, sounds, smells, and other sensory experiences to help control their physical and mental states ⁸.

This study aimed to evaluate the effectiveness of LASIK surgery process education and guided imagery on preoperative anxiety and postoperative emotional self-regulation among female LASIK candidates.

Patients and Methods

This study was approved by the Ethics Committee of Islamic Azad University, West Tehran. All patients gave written consent before entering the study.

Data collection was conducted through questionnaires, which were analyzed to derive the findings. The statistical population for this study consisted of female candidates for LASIK surgery at the operating room of Negah Eye Hospital, Tehran, Iran. A total of 30 participants were selected using convenience sampling over the course of one month and randomly assigned to either an experimental or a control group, with 15 participants in each group. Inclusion criteria included providing informed consent and demonstrating cooperation. The communication and training interventions were carried out in person and face-to-face by the researcher.

The instruments used in this study included the Amsterdam Preoperative Anxiety Questionnaire (APAQ), which comprises six questions designed to evaluate two dimensions: preoperative anxiety and the need for information prior to surgery. The scoring is based on a five-point Likert scale, where

a higher total score indicates greater anxiety levels and a higher need for information about the surgery. In research conducted by Nikandish et al.,⁹ the APAQ demonstrated a high concurrent validity with the Spielberger Anxiety Test (correlation coefficient of 0.68), while the correlation for measuring the need for information was moderate (0.5)⁹. Reliability was assessed using Cronbach's alpha, yielding values of 0.84 for preoperative anxiety and 0.82 for the need for preoperative information. These results confirm that the APAQ has appropriate validity and reliability for measuring preoperative anxiety⁹. It was therefore employed in this study to evaluate the impact of training on the LASIK procedure and positive guided imagery on preoperative anxiety.

Another instrument used was the Gross and John Emotion Regulation Questionnaire, which includes two subscales: reappraisal (six items) and suppression (four items). Respondents rated their agreement with statements on a seven-point Likert scale, ranging from strongly disagree (score of 1) to strongly agree (score of 7).

Both the experimental and control groups completed the APAQ and the Gross and John Emotion Regulation Questionnaires before the intervention. After completing these questionnaires, the experimental group received comprehensive training on the LASIK procedure, including detailed explanation of the surgical steps, followed by positive mental imagery exercises. The control group received only the standard preoperative instructions. Thirty minutes later, the APAQ was administered again to both groups, and the Gross and John Emotion Regulation Questionnaire was re-administered after surgery.

Standard preoperative information was

provided to all participants during the informed consent process. This included details about the outpatient nature of the procedure, its effectiveness, and potential postoperative symptoms. However, the experimental group received additional comprehensive training on all the actions the physician would take during the LASIK procedure, the use of surgical materials and equipment, the administration and effectiveness of local anesthetic drops, and instructions for performing positive mental imagery.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 25 (Armonk, NY: IBM Corp.). To assess the normality of the research variables, the Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted, and Levene's test was used to examine homogeneity. For both emotion regulation and surgical anxiety, across the control and experimental groups, and at both pre-test and post-test stages, the significance values for the Kolmogorov-Smirnov, Shapiro-Wilk, and Levene's tests were all greater than 0.05, confirming the assumption of normality and homogeneity.

Additionally, the assumption of homogeneity of regression slopes was evaluated by testing the interaction effect of the covariate (pre-test scores) and group (control and experimental). The results showed non-significant interaction effects, with significance values greater than 0.05 for all hypotheses. This confirmed the appropriateness of using univariate and multivariate analyses of covariance to analyze the hypotheses.

Results

In this study, 15 patients were assigned to

the experimental group and 15 to the control group. Table 1 compares the level of surgical anxiety and emotional self-regulation between the case and control groups.

According to table 1, the mean emotion regulation score in the control group remained nearly unchanged between the pre-test (41.80 ± 8.29) and the post-test (41.87 ± 8.22). In contrast, the experimental group showed a notable increase, with the mean emotion regulation score rising from 41.47 ± 6.06 at the pre-test to 54.47 ± 6.76 at the post-test, indicating a significant improvement.

For surgical anxiety, the control group showed a slight decrease in the mean scores from 22.13 ± 4.96 at the pre-test to 20.73 ± 3.77 at the post-test. In the experimental group, the mean surgical anxiety score decreased more markedly, from 19.93 ± 5.24 at the pre-test to

15.73 ± 6.54 at the post-test.

As shown in table 1, the mean post-test surgical anxiety was 20.73 ± 3.77 in the control group and 15.73 ± 6.54 in the experimental group showing a statically significant difference ($P = 0.35$). This indicates that the training on the LASIK procedure and guided mental imagery had a significant impact on reducing preoperative anxiety among female LASIK surgery candidates.

Also the mean post-test emotional self-regulation score was 41.87 ± 8.22 in the control group and 54.47 ± 6.76 in the experimental group showing a statically significant difference ($P = 0.26$). This indicates that training on the LASIK procedure and guided mental imagery had a significant impact on postoperative emotional self-regulation in female LASIK surgery candidates.

Table1. Comparison of the level of surgical anxiety and emotional self-regulation between the case and control groups

Variables		Possible values	Control Group Mean $\pm$ SD	Experimental Group Mean $\pm$ SD	P value *
Emotion Self-Regulation	Pre test	10 - 70	41.80 ± 8.29	41.47 ± 6.06	0.42
	Post test	10 - 70	41.87 ± 8.22	54.47 ± 6.76	0.026
Surgical Anxiety	Pre test	6 - 30	22.13 ± 4.96	19.93 ± 5.24	0.097
	Post test	6 - 30	20.73 ± 3.77	15.73 ± 6.54	0.035

*Based on independent t-Test

Discussion

The present study examined the impact of LASIK procedure education and positive mental imagery on preoperative anxiety and postoperative emotional self-regulation among female LASIK surgery candidates. The findings revealed that educating patients

about the LASIK procedure and guided imagery significantly reduced preoperative anxiety. These results align with previous research relating to the subject¹⁰⁻¹⁴. This outcome can be explained by the fact that education about the LASIK procedure helps patients understand the steps medical staff

and surgeons will take during the operation, reassuring them that no dangerous procedures will be performed. This understanding leads to reduced anxiety. Stress is a multifaceted phenomenon that impacts physical, psychological, cognitive, and emotional aspects of an individual's well-being. Anxiety, as a stress reaction, can manifest in symptoms such as restlessness¹⁵. Educating patients helps mitigate anxiety by addressing the unfamiliarity of the environment or treatment method, which can otherwise cause stress. Familiarization and positive mental imagery reduce this stress¹⁶. Through education and guided imagery, preoperative anxiety can be effectively managed. Positive mental imagery enables patients to focus on envisioning pleasant events or positive outcomes rather than the surgical process or potential negative scenarios. This mental shift acts as a distraction, helping them stay calm and reducing anxiety. In addition to anxiety reduction, these interventions positively impacted postoperative emotional self-regulation. Familiarity with the stages and procedures of the operation allows patients to better control their emotions and behaviors, improving cooperation during the procedure. By understanding what to expect, patients gain a sense of preparedness, fostering an optimistic outlook. Positive mental imagery further enables patients to redirect their focus away from anxiety-inducing stimuli, promoting relaxation and improving vital signs. This technique creates a sense of being in a favorable environment rather than an operating room, aiding in emotional regulation. From a dual-system perspective, humans possess two parallel and interactive systems that regulate emotions. One is the innate, biological arousal system, which responds automatically and involuntarily to emotional

stimuli¹⁷. The other is the cognitive system, which interprets stimuli based on experience and learning, evaluating their meaning or significance¹⁷. Education about the procedure enhances the cognitive system, helping patients interpret and perceive the surgical experience more positively through guided imagery. As a result, preoperative education improves emotional self-regulation, leading to better patient responses. Positive mental imagery, a mental technique involving deliberate visualization, can induce rapid changes in both body and mind, reducing stress and enhancing immune function¹⁸. Consequently, teaching this method to patients before LASIK is highly recommended, as it promotes self-regulation, improves cooperation, and supports quicker recovery.

Education on the LASIK procedure and positive mental imagery might significantly reduce preoperative anxiety and enhance postoperative emotional self-regulation. Both factors are crucial for effective patient cooperation and treatment success. Managing stressful situations often involves problem-focused coping, establishing control over circumstances, and seeking social support. During the education process, nurses play a key role in providing social support, which helps patients apply the training to alleviate anxiety. This reduction in anxiety fosters emotional control and regulation, leading to better patient cooperation.

Conclusion

Education on the LASIK procedure and guided mental imagery effectively reduces preoperative anxiety and enhances postoperative emotional self-regulation among female patients undergoing this procedure.

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Footnotes and Financial Disclosures

Conflict of interest:

The authors have no conflict of interest with the subject matter of the present manuscript.