

# The Psychosocial Improvement after Strabismus Surgery in Iranian Patients

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## Abstract

**Purpose:** To compare the psychosocial status before and after successful strabismus surgery on Iranian strabismic patients

**Methods:** One hundred twenty-four strabismic patients, older than 15 years were evaluated between 2009 and 2010. They were asked to complete a questionnaire about their psychosocial experiences, before and three months after successful strabismus surgery. Effects of strabismus on self-esteem, self-confidence, and self-assessment of intelligence, employment and interpersonal relationships were compared.

**Results:** Fifty-six percent of patients had problems in adjusting to society, and 71% had developed a mannerism to camouflage their misalignment before surgery. The preoperative scores of self-esteem, self-confidence, and interpersonal relationship were  $4.33 \pm 2.07$ ,  $4.23 \pm 2.53$  and  $6.06 \pm 2.33$  which changed to  $8.33 \pm 3.02$ ,  $7.29 \pm 2.89$  and  $6.72 \pm 3.17$  after surgery, respectively ( $p < 0.001$  for all of values). More esotropic patients reported to be discriminated against compared to exotropic patients. Postoperatively, 79% of patients reported improvements in their ability to meet new people, and 82% in interpersonal relationships. Scores of self-confidence and self-esteem increased up to three and four units, respectively ( $p < 0.001$  for both values).

**Conclusion:** Patients with strabismus have psychosocial problems and successful strabismus surgery improves their psychosocial status.

**Keywords:** Adults, Strabismus Surgery, Self-Esteem, Self-Confidence, Interpersonal Relationship, Questionnaire, Psychosocial Status

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## Introduction

Strabismus is a common ocular condition, affecting 4% of the adult population.<sup>1</sup> It is considered a disability related to appearance of patients which in turn adversely affects their quality of life, specially the psychosocial aspects,<sup>2,3</sup> like self-esteem, self-image, self-confidence, employment and normal socialization.<sup>2,6,7</sup> Therefore, these patients tend to camouflage their misalignment and sometime get socially isolated.<sup>2,4,5</sup>

Reconstructive surgery is more than just a cosmetic procedure.<sup>8</sup> There are many qualitative and quantitative improvements produced by surgery. Successful surgery, in addition to anatomical correction, can improve social and psychological status of patients. The purpose of this study is to evaluate the effect of successful strabismus surgery on the psychosocial status of strabismic patients in Iran.

## Methods

This prospective, interventional, before-after study included 124 consecutive strabismic patients who underwent successful strabismus surgery at Basir Eye Clinic between April 2009 and September 2010. All operations were performed by one of the authors (G.Gh). The study and data collection conformed to all local laws and were compliant with the principles of the Declaration of Helsinki. Study protocol was approved by the Institutional Review Board and Ethic Committee of Tehran University of Medical Sciences. Patients were assured that their responses and data will remain confidential and informed consent was obtained from all participants.

The inclusion criteria were age 15 years or older at the time of surgery; any horizontal or vertical deviation, and having a successful surgical procedure for correcting strabismus. Participants were excluded if they had any facial deformity, cosmetic disorder, neurologic disease or any other problems which might interfere with their psychological status. Demographic information such as age, sex, marital status, education level and occupation of patients were recorded and other information such as deviation type, degree of deviation, visual acuity (VA), and timing of previous surgeries were also obtained. For assessing preoperative and postoperative

psychosocial status, a standardized questionnaire based on a questionnaire developed by Bradley et al<sup>4</sup> was used. In order to standardize and culturally adapt the questionnaire, independent forward-backward translations were done by three bilingual translators; each one for each step. Eventually it was revised by a psychologist (Dr MA Besharat). The questions were succinct, direct, and were designed to be answered either yes or no. Interviews were conducted by a nonmedical technician, who was masked to the type of strabismus and outcome of the surgery. Responses to questions were assigned the numeric value, one for an affirmative response and 0 for a negative response for data analysis.

The questionnaire was proposed to measure five psychological aspects: self-esteem, self-confidence, self-assessment of intelligence, effect on employment options and interpersonal relationship. A preoperative part with 11 and a postoperative part with six questions (Appendix 1, page 254). Formulas to assign a numeric score for these parameters were created using the ranking system for questions as outlined in Appendix 2 (page 255). For each respondent, psychosocial issues were evaluated by coding responses into the predetermined formulas, which rated their answers on a 0 to 10 scale. The postoperative questions were designed to assess any changes in these parameters. The patients answered preoperative part of questionnaire before surgery and then postoperative part of questionnaire three months after strabismus surgery. A postoperative psychosocial parameter score, therefore, reported a net change in that parameter. Self-assessment of intelligence was not directly addressed in the postoperative questions and so was eliminated from the postoperative psychosocial parameters. All statistical analyses were performed using SPSS version 17.0 (SPSS Inc. Chicago, Ill., USA). Two-tailed paired student's *t* and *Chi Square* tests were used to analyze the variables.

## Results

One hundred fifty patients were included in this study. Of these, 124 (64 men and 60 women) replied to the questionnaire

completely at the follow-up visits; twenty-six patients did not complete follow-up visits and were excluded. The mean age was  $28.18 \pm 10.33$  (15 to 58). According to their type of deviation, participants were divided into two groups (esotropic and exotropic deviation groups). They were observed in 42 and 76 patients, respectively. Six patients had just vertical deviation. The average angles of horizontal deviation were  $32.52 \pm 20.30$  [0 Prism Deviation (pd) to 95 pd] and  $31.76 \pm 16.37$  (6 pd to 85 pd) in esotropia and exotropia. Thirty-six patients (29%) had diplopia, while 88 patients (71%) did not have any complaints about diplopia.

Ninety patients (72.6%) reported strabismus caused them to be embarrassed. Also, 78 patients (62.9%) avoided new activities, 70 (56.5%) had trouble in adjusting to new groups and society, and 82 (66.1%) reported strabismus negatively affecting their self-esteem (Table 1). Moreover, 88 patients (71%) developed a mannerism to camouflage their misalignment. The preoperative scores of self-esteem, self-confidence, interpersonal relationship and employment were  $4.33 \pm 2.07$ ,

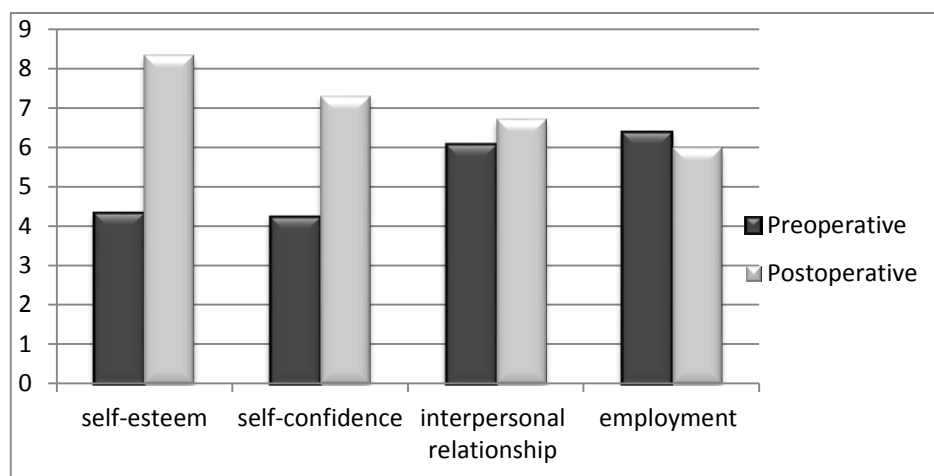
$4.23 \pm 2.53$ ,  $6.06 \pm 2.33$  and  $6.37 \pm 4.24$  which changed to  $8.33 \pm 3.02$ ,  $7.29 \pm 2.89$ ,  $6.72 \pm 3.17$  and  $6.00 \pm 3.82$  three months after surgery, respectively ( $p < 0.001$  for all comparisons), (Figure 1).

The majority of patients reported that surgery improved their self-esteem (88.7%). Moreover, 98 patients responded surgery improved their confidence to meet new people (79%), better relationship with others (82.3%), and job performance (75.8%).

Comparing esotropic with exotropic patients, there was no statistically significant difference in responses to questions, except in "Discrimination" parameter. More esotropic patients reported that people discriminated them than exotropic patients (42.9% compared with 26.3%, respectively). Also, employment's score for esotropic patients was  $5.23 \pm 3.65$ , compared with  $6.97 \pm 4.46$  in exotropic patients ( $p < 0.001$ ). Other differences between scores of esotropia and exotropia, gained by formulas were not statistically significant. There were no significant differences in variables between esotropic and exotropic men, and women.

**Table 1.** Results of questioner in patients with corrective strabismus surgery

Questions	Total	Esotropia	Exotropia	p
<b>Preoperatively</b>				
Q1. Embarrassed	72.6%	66.7%	78.9%	<0.001
Q2. Perceived less sincere	40.3%	42.9%	39.5%	<0.001
Q3. Underestimate intelligence	25.8%	33.3%	23.7%	<0.001
Q4. Alter career	40.3%	42.2%	38.6%	<0.001
Q5. Discriminated	32.3%	42.9%	26.3%	<0.001
Q6. Problem adjusting	56.5%	52.4%	57.9%	<0.001
Q7. Trouble eye contact	38.7%	38.1%	36.8%	<0.001
Q8. Negative self-esteem	66.1%	61.9%	71.1%	<0.001
Q9. Avoid activities	62.9%	71.4%	60.5%	<0.001
Q10. Camouflage	71.0%	61.9%	73.7%	<0.001
<b>Postoperatively (after three months)</b>				
QP1. Improved self-esteem	88.7%	85.7%	86.8%	<0.001
QP2. Meet new people	79.0%	81.0%	81.6%	<0.001
QP3. Improve relationship	82.3%	85.7%	81.6%	<0.001
QP4. Improve employment	53.2%	61.9%	52.6%	<0.001
QP5. Try activities	35.5%	42.9%	31.6%	<0.001
QP6. Work better	75.8%	71.4%	78.9%	<0.001



**Figure 1.** Improvements of parameters following the surgery. Calculated scores of parameters showed on a scale of 0 to 10. Self-assessment of intelligence was not questioned, so it was eliminated from the figure. Significant improvement is seen in all parameters except in employment related questions, which no change occurred.

## Discussion

Facial feature has been shown to play an important role in social interactions. Therefore, any facial abnormality may cause person to be isolated. Strabismus, like other ocular problems, adversely affects patients' psychosocial status. Our study showed postoperative scores for all parameters except "employment" (i.e. interpersonal relationship, self-esteem, and self-confidence) were increased. A significant net change was seen in postoperative parameter scores, except "employment". Although, the total score of "employment" for esotropic patients increased after surgery ( $5.23 \pm 4.27$  versus  $6.47 \pm 3.32$ ).

Several studies have reported strabismus surgery improves psychosocial functions.<sup>4,6,9,10</sup> In a study of 31 patients, self-esteem and self-confidence positively changed after surgery.<sup>6</sup> Although, the results of these studies are in agreement with our findings, they had small sample size compared with our study. Nelson et al<sup>4</sup> proposed a questionnaire to assess probable strabismic patients' psychosocial problems. They showed that patients with strabismus experience psychosocial problems like low self-esteem and low self-confidence. After surgery, the improvement of self-esteem was 85% while in our study self-esteem was improved in about 90% of participants after surgery. Although, similar studies have not assessed adjustment to society, our study showed that about 56%

of patients had problem in this parameter. Low self-esteem and self-confidence may play a role. After surgery, about 80% of patients tried to meet people and their interpersonal relationships improved whereas Nelson et al<sup>4</sup> reported interpersonal relationship was improved in 27% of patients after surgery. This difference can be due to the meaning of relationship in different cultures, as our study was conducted in Iran whereas previous studies in western countries.

We did not find any significant difference between esotropic and exotropic patients, but more esotropic patients reported that people discriminated against them than exotropic patients. The employment score for esotropic patients was  $5.23 \pm 3.65$ , compared with  $6.97 \pm 4.46$  in exotropic patients, showing that the impact of strabismus on employment discrimination is stronger in esotropic than exotropic adult patients.

In Iran, all insurance companies consider strabismic strabismus surgery as a cosmetic procedure. Therefore they do not cover strabismus surgery. Our study showed nearly all psychosocial variables of our questionnaire improved after this surgery. Considering these results, it is more reasonable for these companies to cover expenses of this surgery.

There were some limitations in this study. Our study was planned to assess five items, considered as psychosocial parameters. It is

noteworthy that the term “psychosocial aspects” is so broad and this questionnaire cannot be generalized to all of them. The sample size is not big enough and the method of patient recruitment makes our study unsuitable to be generalized for the whole Iranian population. Although we assessed psychosocial aspect of adult strabismus surgery, more studies are needed to assess this aspect in children.

### Conclusion

Our study showed that there are some psychosocial problems in patients with

strabismus and these problems have a negative impact on many aspects of their lives. Along with other benefits of surgical correction, realignment of strabismus reduces these difficulties. We demonstrated that preoperative parameters improved after successful surgical correction.

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