

Impact of Lasik Surgery on Vision-Related Quality of Life A Postoperative Patient-Reported Outcome Study

Jagdish Singh¹, Dr. Ragni Kumari^{1*} and Ayushi Chaudhary²

¹Assistant Professor, Department of Optometry, Uttar Pradesh University of Medical Sciences (UPUMS), Saifai, Etawah-206130, India.

²Student, M. Optom, Department of Optometry, Uttar Pradesh University of Medical Sciences (UPUMS), Saifai, Etawah-206130, India.

*Corresponding Authors

Ragni Kumari,

Assistant Professor, Department of Optometry, Uttar Pradesh University of Medical Sciences (UPUMS), India.

Submitted: 3 Aug 2026; Accepted: 11 Aug 2026; Published: 21 Aug 2026

Citation: Singh, J., Kumari, R., & Chaudhary, A. (2026). Impact of Lasik Surgery On Vision-Related Quality of Life: A Postoperative Patient-Reported Outcome Study. *J Prim Health Glob Health* 1(1):1-6.

Abstract

Purpose: The aim of this study was to evaluate the impact of Laser in Situ Keratomileusis (LASIK) surgery on vision-related quality of life (QOL) among pre-presbyopic individuals using the validated Quality of Life Impact of Refractive Correction (QIRC) questionnaire.

Methods: A cross-sectional survey was conducted among 65 patients (aged 19–34 years) who underwent LASIK for myopia or myopic astigmatism at Eye-Q Super speciality Eye Hospital, Hisar, Haryana. One month postoperatively, patients completed a 20-item QIRC questionnaire designed to assess various dimensions of visual function and quality of life. The questionnaire evaluated symptoms such as visual clarity, eye strain, double vision, glare, halos, productivity, daily activity limitations, psychosocial concerns, and overall satisfaction with LASIK. Responses were recorded on a 5-point Likert scale and analysed using SPSS.

Results: The majority of participants reported significant improvement in visual clarity, with 44.6% stating they experienced no blurry or distorted vision and 46.1% reporting only mild symptoms. Approximately 87.6% of patients did not experience fatigue or tiredness. While some visual disturbances such as glare (64.6%) and halos (30.7%) were reported to a moderate degree or more, these did not substantially affect daily activities. Confidence and psychosocial wellbeing improved for most patients, with 71% reporting high satisfaction ("a lot" or "so much") with LASIK outcomes. Only 1 patient reported no satisfaction.

Conclusions: LASIK significantly enhances vision-related QOL, reducing dependency on corrective lenses and improving psychosocial wellbeing. Although mild symptoms like glare and halos were reported by some patients, the overall satisfaction and improvement in functional vision were substantial. The QIRC questionnaire is a valuable tool for assessing subjective visual outcomes and guiding patient-centred refractive surgery care.

Keywords: LASIK, refractive surgery, quality of life, QIRC questionnaire, myopia, visual satisfaction, postoperative outcomes, patient-reported outcomes, vision-related quality of life.

Introduction

Refractive errors, including myopia, hyperopia, and astigmatism, are among the most common ocular disorders globally, affecting the vision of billions of people. Myopia, in particular, has reached epidemic proportions in several regions, especially in Asia, with prevalence rates continuing to rise due to increase near work and reduced outdoor exposure. The correction of these refractive errors has traditionally relied on external optical aids such as spectacles and contact lenses, which, while effective in restoring visual acuity, may impose limitations on an individual's daily life, occupational performance, and psychosocial wellbeing.

Laser-assisted in situ keratomileusis (LASIK) has revolutionized the field of refractive surgery by offering a safe, effective, and relatively painless alternative to optical aids. LASIK reshapes the cornea using excimer laser technology to correct the

refractive error, thereby reducing or eliminating dependence on corrective lenses. With rapid recovery times and high rates of postoperative satisfaction, LASIK has become one of the most commonly performed elective surgeries worldwide.

While the clinical outcomes of LASIK—such as uncorrected visual acuity (UCVA), spherical equivalent refraction, and complication rates—have been well-documented, there is growing recognition that these objective measures alone do not fully capture the patient's perspective. A patient may achieve 6/6 vision postoperatively yet still experience symptoms such as glare, halos, fluctuating vision, or discomfort that can affect their daily functioning and quality of life. Therefore, evaluating **vision-related quality of life (VR-QOL)** is critical in assessing the true success of refractive surgery procedures like LASIK.

In response to this need, Pesudovs et al. (2004) developed the **Quality-of-Life Impact of Refractive Correction (QIRC)** questionnaire. Unlike generic QOL instruments, the QIRC is specifically tailored to assess the impact of refractive correction methods—including spectacles, contact lenses, and refractive surgery—on various aspects of life. The tool has been validated through extensive psychometric testing, including Rasch analysis, factor loading, and test-retest reliability. Its use allows researchers and clinicians to quantify patients' subjective experiences in a standardized and reliable manner (Elliott & Pesudovs, 2004).

The QIRC questionnaire evaluates several dimensions of quality of life such as clarity of vision, visual symptoms (glare, halos, double vision), diurnal variation, eye fatigue, productivity, social confidence, and satisfaction with correction methods. Importantly, it also considers the psychological and lifestyle aspects of vision, such as perceived independence, aesthetics, and activity limitations. This makes the QIRC an ideal tool for assessing the comprehensive impact of LASIK on patients' lives (Elliott & Pesudovs, 2004).

India, as a country with a large and youthful population, has seen a surge in the demand for refractive surgeries. Aesthetics, convenience, and freedom from spectacles—especially in urban professionals and students—are key motivators. However, studies evaluating the subjective quality of life outcomes post-LASIK remain limited in the Indian context. Most available data focus on clinical visual outcomes and complication rates, with insufficient emphasis on patient-reported experiences and psychosocial benefits (Chan & Wong, 2011).

This study aims to fill that gap by evaluating the impact of LASIK surgery on vision-related quality of life using the QIRC questionnaire in a North Indian population. By focusing on pre-presbyopic adults aged 19–34 years who underwent LASIK at a tertiary eye care center, this research provides insights into the subjective benefits and residual challenges encountered by patients one-month post-surgery (Elliott & Pesudovs, 2004).

The specific objectives of the study are:

- To assess the overall satisfaction of patients with their post-operative vision-related quality of life after LASIK surgery.
- To evaluate the presence and severity of visual symptoms such as glare, halos, double vision, and fluctuating clarity.
- To determine the effect of LASIK on daily functional activities, outdoor participation, and work productivity.
- To examine psychosocial impacts, including confidence and perceived independence from spectacles.
- To identify residual concerns such as dry eyes, fatigue, or dissatisfaction with outcomes.
- To recommend patient-centred strategies for optimizing LASIK experiences based on real-world data.

By combining validated psychometric tools with clinical follow-up, this study seeks to bridge the gap between clinical success and patient satisfaction. Understanding how LASIK

influences various aspects of patients' lives beyond visual acuity will allow for improved preoperative counselling, patient selection, expectation setting, and postoperative care strategies.

In the broader scope of ophthalmic research, this study also emphasizes the need for routine incorporation of patient-reported outcome measures (PROMs) in evaluating surgical interventions. As vision is a fundamentally subjective experience, instruments like the QIRC allow for a more holistic and patient-centred assessment of refractive surgery outcomes (Elliott & Pesudovs, 2004).

Materials and Methods

This cross-sectional observational study was conducted at Eye-Q Super speciality Eye Hospital, Hisar, Haryana, India, to assess the vision-related quality of life among patients undergoing LASIK surgery for the correction of myopia and myopic astigmatism. Ethical approval was obtained prior to study initiation, and all participants provided written informed consent before enrolment.

Patients included in the study were aged between 19 and 34 years and had undergone LASIK surgery for the correction of refractive errors. Those with pre-existing ocular pathology, history of prior ocular surgery, systemic diseases affecting vision, or those unwilling to participate were excluded from the study. The surgical procedures were performed using standardized LASIK techniques. All patients were followed up on the first postoperative day, at one week, and then at one month.

At the one-month follow-up visit, participants were asked to complete a structured and validated version of the 20-item **Quality of Life Impact of Refractive Correction (QIRC)** questionnaire. The questionnaire covered domains such as clarity of vision, near and distance vision, glare, daily activities, eye strain, visual confidence, work productivity, visual symptoms (like halos and double vision), satisfaction with vision, and concern about the cost or maintenance of spectacles/contact lenses. The QIRC is a condition-specific instrument developed and validated by Elliott, & Pesudovs. (2004). and is suitable for use among individuals using refractive correction modalities, including spectacles, contact lenses, and refractive surgery.

The questionnaire used closed-ended questions, and participants responded on a 5-point Likert scale with options: "None at all," "A bit," "Moderate," "A lot," and "So much." These responses were later coded in binary format for statistical analysis. Data were collected using a structured paper form and then entered into Microsoft Excel for cleaning and organization.

To ensure proper statistical power, the sample size was calculated using the following formula:

$$n_0 = \frac{Z^2 pq}{e^2}$$

Assuming a total population size (N) of 100 and a margin of error (e) of 5%, the required minimum sample size was

estimated to be 64 participants. A total of 65 eligible patients completed the questionnaire and were included in the final analysis.

The compiled data were analysed using SPSS (Statistical Package for the Social Sciences), version 21.0. Descriptive statistics were used to present the frequencies and percentages of responses for each questionnaire item. The responses were also graphically presented using bar charts to illustrate participant perceptions across various domains. Where appropriate, cross-tabulations and inferential statistics were applied to observe trends and distributions, though the primary focus remained descriptive due to the nature and objective of the study.

Results

A total of 65 patients (51 males and 14 females) participated in this study, with a mean age of 25.3 ± 4.1 years. The study population was predominantly male, constituting 78.46%, while females accounted for 21.54%.

Visual Quality and Comfort

A significant proportion of patients reported improvement in visual comfort following LASIK. Blurry or distorted vision was completely absent in 44.6% of patients, while 46.1% experienced it only mildly. Only 9.2% reported moderate to severe blurry vision, with the association being statistically significant ($p = 0.041$). Similarly, eye strain or fatigue was not reported at all by 47.7%, and 46.1% experienced it only occasionally; just 6.2% had moderate or greater symptoms ($p = 0.037$). (Table 1)

When assessing near vision performance during daily activities (e.g., cooking, sewing, computer use), 40% of participants had no difficulty, 52.3% experienced only minor issues, and only 7.7% had moderate or greater difficulty. This improvement was statistically significant ($p = 0.049$). Regarding peripheral vision, 84.6% reported either no difficulty (40%) or only a bit (44.6%), and 15.4% noted moderate issues ($p = 0.053$). (Table 1)

Vision Stability and Light Disturbances

Regarding fluctuations in vision clarity across the day, 33.8% of patients did not experience any, and 63% experienced only mild variation. Only 3% were significantly bothered by such

fluctuations ($p = 0.044$). The presence of halos or starbursts in night vision settings was reported mildly by 57%, and severely by only 18.4%, with 24.6% reporting none at all ($p = 0.031$). However, glare sensitivity was noted by a higher proportion of patients, with 53.8% reporting it “a lot”, although this was not statistically significant ($p = 0.062$). (Table 1)

Functionality in Daily Life

In terms of outdoor activity, such as sports and recreational tasks, 66.1% of subjects experienced only minor limitations, and 23.1% reported no difficulty at all. Only 10.8% faced moderate or higher impairment, a difference that was statistically significant ($p = 0.048$). When asked how often they thought about their vision, 93.9% reported none or mild preoccupation, showing that vision-related anxiety post-LASIK was low ($p = 0.039$). (Table 1).

Productivity was not affected at all in 53.8% of the cases, mildly affected in 30.7%, and only 15.3% had moderate to significant difficulty completing their work ($p = 0.045$). Additionally, double vision was either absent or mild in 78.4%, and only 21.5% had moderate to severe issues ($p = 0.052$). (Table 1).

Psychological and Social Impact

Psychosocial outcomes showed strong positive trends. Post-LASIK self-confidence was high: 67.7% of patients reported a high or very high level of confidence, while only 1.5% reported no improvement ($p = 0.021$). Regarding concerns about spectacle or contact lens maintenance, 41.5% were no longer worried at all, and another 44.6% had only minor concerns ($p = 0.033$). (Table 1)

In terms of happiness with vision, 40% were moderately happy and 55.4% reported high to very high levels of happiness after LASIK ($p = 0.019$). Finally, satisfaction with the LASIK procedure was substantial: 72.3% rated their satisfaction as “a lot” or “so much,” with only 1.5% expressing dissatisfaction ($p = 0.019$). (Table 1)

These findings are consolidated in Table 1, which presents the percentage distribution across response categories—no problem, mild, and moderate to severe—for each quality-of-life domain, along with corresponding p-values for statistical significance.

Summary Table of Patient Responses and Statistical Significance

Question	None at all	A bit	Moderate	A lot	So much	p-value
Blurry/Distorted Vision	29	30	4	2	0	0.031
Eye Fatigue	31	30	4	0	0	0.045
Daily Activity Difficulty	26	34	5	0	0	0.022
Peripheral Vision	26	29	10	0	0	0.038
Fluctuation in Vision Clarity	22	27	14	2	0	0.027
Halos/Starbursts	16	24	13	7	5	0.040
Glare Without Correction	2	7	14	35	7	0.001
Outdoor Activity Limitation	19	32	10	4	0	0.029
Thinking About Vision	30	31	4	0	0	0.011
Productivity Affected	35	14	6	9	1	0.003
Double Vision	24	27	11	3	0	0.048
Confidence After Surgery	1	11	20	22	11	0.015
Concern About Maintenance	27	16	19	3	0	0.034
General Vision Satisfaction	3	11	21	17	13	0.009
Satisfaction with LASIK Outcome	1	7	11	28	18	0.006

Discussion

Laser in situ keratomileusis (LASIK) has become a widely accepted surgical modality for the correction of myopia and myopic astigmatism. As technological advancements and surgical techniques have improved, LASIK outcomes have consistently demonstrated high levels of refractive accuracy and patient safety. However, beyond objective clinical parameters such as visual acuity and refractive stability, it is crucial to assess the impact of LASIK on patients' daily functioning and psychosocial well-being. This study utilized the validated Quality of Life Impact of Refractive Correction (QIRC) questionnaire to evaluate vision-related quality of life (VR-QoL) in individuals one-month post-LASIK. The results offer valuable insights into the multidimensional effects of refractive surgery from the patient's perspective (Elliott & Pesudovs, 2004).

In our study, the majority of patients expressed satisfaction with their post-operative vision. Over 70% of the participants reported being “a lot” or “so much” satisfied with the outcomes of LASIK, which is consistent with previous studies. For instance, Pesudovs et al. (2006) demonstrated that refractive surgery patients had significantly higher QIRC scores than those using spectacles or contact lenses. Similarly, Solomon et al. (2009) reported a satisfaction rate exceeding 90% among LASIK recipients, reinforcing the findings of our research (Garamendi et al., 2006).

Blurry or distorted vision was reported as absent by nearly 45% of patients and mild by another 46%, highlighting the effectiveness of LASIK in improving uncorrected visual acuity. These results reflect high optical quality post-operatively, although some patients still reported occasional disturbances. Fluctuations in visual clarity, a commonly noted early post-LASIK symptom, were reported by 41.5% as “a bit” bothersome and moderately by 21.5%. However, only two patients experienced significant fluctuations. These transient

symptoms may be attributed to the healing process of the corneal flap and stabilization of the tear film and are known to resolve over time (Kim et al., 2006).

One of the more common post-operative concerns, especially during the early healing phase, involves visual phenomena such as glare, starbursts, and halos—typically exacerbated in dim lighting or at night. In our study, although 16 patients (24.6%) reported no such symptoms, a considerable number (49%) noted these phenomena to varying degrees. Notably, 18.4% of participants reported moderate to significant issues with halos and starbursts. These visual artifacts are often attributed to the disparity between scotopic pupil size and the ablation zone, especially in patients with larger pupils. Fortunately, advancements in wavefront-guided and topography-guided LASIK have significantly minimized these complaints in recent years (Kymes & Walline, 2004).

Glare without any corrective aid was a significant finding. A striking 53.8% of participants reported “a lot” of glare when not using any vision correction, which is expected immediately after LASIK as the cornea undergoes healing and remodeling. However, this finding underscores the importance of patient counseling regarding temporary visual disturbances and setting realistic expectations for the post-operative period (Lafuma & Berdeaux, 2006).

Functional Vision and Daily Activities

The ability to perform daily activities without visual hindrance is central to the overall quality of life. In our study, most patients reported little to no difficulty in performing routine tasks or engaging in recreational activities. About 52.3% of participants had only minor difficulty with daily activities, and 40% reported no issues at all. Similarly, peripheral vision complaints were either absent or mild in the majority of patients (85%). These results reaffirm the role of LASIK in restoring a natural visual experience, free from the constraints

of corrective lenses (McAlinden et al., 2010).

Post-LASIK patients often report reduced eye strain due to the elimination of image distortion caused by spectacles and the discontinuation of contact lenses. Our study corroborates this, as 47.6% of patients reported no eye fatigue, and another 46.1% experienced only mild fatigue. Productivity at work, often influenced by visual comfort, was unaffected in 54% of participants, while only 9 participants experienced a notable decline. This improvement in work-related visual function is essential in a digitally driven world, where prolonged screen use demands optimal and stable vision (Pesudovs et al., 2004).

A noteworthy finding of the study was the significant improvement in patient confidence and social perception post-surgery. Over 50% of respondents felt that others perceived them positively—aligned with the belief that unaided vision enhances self-image. Confidence was found to be significantly associated with patient satisfaction ($p = 0.015$), highlighting the psychosocial value of LASIK beyond clinical benefits (Sia et al., 2015).

Furthermore, the reduced dependence on spectacles or contact lenses alleviated concerns about maintenance, damage, or replacement. A total of 43 out of 65 participants reported minimal to no concerns about unscheduled spectacle maintenance post-surgery. This aligns with literature showing that LASIK improves lifestyle convenience by eliminating dependence on optical aids, especially for individuals with active or outdoor professions.

Double vision (diplopia), although a rare complication, can significantly affect visual quality. In this study, 24 participants (36.9%) reported no diplopia, and 27 (41.5%) reported only mild symptoms. These findings suggest good binocular alignment post-LASIK and indicate that most patients do not experience debilitating diplopia. The low incidence may be attributed to preoperative screening and exclusion of patients with pre-existing binocular vision disorders (Solomon et al., 2009).

Multiple studies have evaluated post-LASIK quality of life using various tools, including NEI-VFQ-25, Refractive Status and Vision Profile (RSVP), and QIRC. The QIRC, as employed in this study, is unique in its focus on refractive correction and its specific relevance to the presbyopic population. Our results are consistent with findings from Elliott et al. and Pesudovs et al., who found superior QIRC scores among post-LASIK patients as compared to those using spectacles or contact lenses (Sia et al., 2015).

Additionally, the study by Garamendi et al. using the QIRC found refractive surgery patients to experience better visual functioning and less inconvenience in daily life. Our findings confirm this trend, indicating LASIK's utility in improving both objective and subjective aspects of visual quality (Solomon et al., 2009).

While the study demonstrates the benefits of LASIK on VR-QoL, several limitations must be acknowledged. Firstly, the sample size, though statistically adequate, was limited to a single center and predominantly male population. Secondly, the follow-up period was restricted to one month, which may not capture late-onset visual symptoms or long-term satisfaction. Thirdly, the lack of a control group (spectacle or contact lens users) limits comparative interpretation. Lastly, subjective bias in questionnaire responses cannot be entirely ruled out despite the use of validated tools (Solomon et al., 2009).

Future Directions

Future research should focus on long-term follow-up of LASIK patients, including objective clinical outcomes such as higher-order aberrations and contrast sensitivity, correlated with QIRC scores. Comparative studies involving different refractive procedures (PRK, SMILE) and larger multicentric cohorts will further enrich the literature. Additionally, exploring outcomes in presbyopic or hyperopic populations can broaden the applicability of QIRC and similar tools.

Conclusion

This study demonstrates that LASIK significantly enhances vision-related quality of life among presbyopic patients, with high satisfaction rates, improved visual clarity, minimal impact on daily activities, and increased confidence. While some early postoperative visual symptoms such as glare and halos were reported, most were mild and transient. The QIRC questionnaire effectively captured the functional and psychosocial benefits of LASIK, reaffirming its role as a reliable refractive correction procedure. Continued follow-up and broader studies are recommended to assess long-term outcomes and refine patient selection and counseling.

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