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Research Article

Comparison of Bromfenac and Nepafenac for Prevention of Cystoid Macular Edema Following Phacoemulsification: A Multicenter Randomized Clinical Study

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ABSTRACT

Objective: To compare the efficacy, safety, treatment adherence, and direct medication cost of topical bromfenac and nepafenac for preventing cystoid macular edema following uncomplicated phacoemulsification.

Methods: This multicenter, assessor-masked, randomized clinical study was conducted over nine months at three tertiary-care ophthalmology departments in Pakistan. A total of 120 adults undergoing uncomplicated phacoemulsification were allocated equally to receive Bromfenac 0.09% twice daily or Nepafenac 0.1% three times daily. Both treatments were started one day before surgery and continued for four weeks postoperatively alongside identical corticosteroid and antibiotic therapy. Spectral-domain optical coherence tomography was performed before surgery and at postoperative weeks 1, 4, and 12. The primary outcome was change in central subfield thickness at four weeks. Secondary outcomes included optical coherence tomography-defined cystoid macular edema, corrected distance visual acuity, anterior chamber inflammation, adverse events, treatment adherence, and direct medication cost.

Results: The mean age of participants was 61.7±7.6 years and 64 (53.3%) were women. At four weeks, central subfield thickness increased by 10.8±13.7 µm in the bromfenac group and 13.9±16.2 µm in the nepafenac group (p=0.260). Cystoid macular edema occurred in 2 (3.3%) and 4 (6.7%) participants, respectively (p=0.679). Corrected distance visual acuity improved significantly in both groups, without a meaningful between-group difference. Adherence of at least 90% was achieved by 88.3% of bromfenac-treated and 73.3% of nepafenac-treated participants (p=0.037). No serious ocular adverse event was observed.

Conclusion: Bromfenac and Nepafenac provided comparable protection against cystoid macular edema following uncomplicated phacoemulsification. Bromfenac was associated with better treatment adherence and a lower modeled direct medication cost, making it a practical option in resource-constrained settings.

Keywords: Bromfenac, Nepafenac, Cystoid Macular Edema, Phacoemulsification, Optical Coherence Tomography.

INTRODUCTION

Cataract remains one of the leading causes of reversible visual impairment worldwide and creates a substantial healthcare burden, particularly in low- and middle-income countries. [1] Phacoemulsification with posterior chamber intraocular lens implantation provides rapid visual rehabilitation, but postoperative complications may still affect the final visual outcome. [2] Pseudophakic cystoid macular edema, also known as Irvine–Gass syndrome, commonly develops within four to

six weeks after surgery and is an important cause of delayed visual recovery. [3]

Surgical manipulation stimulates the release of prostaglandins and other inflammatory mediators, resulting in disruption of the blood–aqueous and blood–retinal barriers. [4] The resulting increase in perifoveal capillary permeability allows fluid to accumulate within the retinal layers and produces cystic changes in the macula. [5] Diabetes mellitus, uveitis, retinal vein occlusion, epiretinal membrane, previous retinal surgery, posterior capsule rupture and vitreous loss increase the likelihood of postoperative macular edema. [6]

Topical corticosteroids and non-steroidal anti-inflammatory drugs are commonly prescribed to control inflammation following cataract surgery. [7] Topical NSAIDs inhibit cyclooxygenase activity and reduce prostaglandin production, thereby targeting an important pathway involved in postoperative inflammation and macular edema. [8] Although these drugs reduce early postoperative macular thickening, their additional effect on long-term visual outcomes after uncomplicated surgery remains uncertain. [9]

Nepafenac is a pro drug that penetrates the cornea and is converted within ocular tissues into amfenac, its active anti-inflammatory metabolite. [10] Bromfenac is a brominated NSAID with good ocular penetration, potent cyclooxygenase inhibition and a relatively convenient dosing schedule. [11] A direct comparison of bromfenac 0.09% and nepafenac 0.1% found broadly similar effects on visual acuity, macular volume and retinal thickness after cataract surgery. [12] Another randomized study reported that both medicines prevented pseudophakic cystoid macular edema when administered with topical dexamethasone. [13] Comparable clinical outcomes have also been reported with newer once-daily formulations of bromfenac and nepafenac. [14]

In resource-constrained settings, dosing frequency, adherence, availability and cost are important when selecting postoperative treatment. This multicenter study compared bromfenac 0.09% with nepafenac 0.1% for preventing cystoid macular edema following uncomplicated phacoemulsification and assessed macular thickness, visual recovery, postoperative inflammation, safety, adherence and treatment cost.

MATERIALS AND METHODS

This assessor-masked, parallel-group, randomized clinical study was conducted from January to September 2025 at the ophthalmology departments of three tertiary-care hospitals in Pakistan. Ethical approval was obtained from the institutional review boards of all participating centers. Written informed consent was obtained from every participant, and the study was conducted in accordance with the Declaration of Helsinki

Adults aged 40–80 years with age-related cataract who were scheduled for elective phacoemulsification and posterior chamber intraocular lens implantation was assessed for eligibility. Only one eye per participant was included. Patients with diabetic retinopathy, pre-existing macular edema, epiretinal membrane, retinal vein occlusion, age-related macular degeneration affecting the fovea, uveitis, glaucoma requiring multiple medicines, corneal disease limiting visual assessment, previous intraocular surgery, topical non-steroidal anti-inflammatory drug hypersensitivity, or inability to complete follow-up were excluded. Patients developing posterior capsule rupture, vitreous loss, retained lens matter, or another major intraoperative complication were withdrawn from the comparative analysis.

A computer-generated allocation sequence with variable block sizes was prepared by an investigator who was not involved in recruitment or outcome assessment. Allocation was concealed in sequentially numbered, opaque, sealed envelopes. Participants were assigned in a 1:1 ratio to receive bromfenac 0.09% twice daily or nepafenac 0.1% three times daily. The different dosing schedules prevented participant masking, but the optometrist performing visual assessment, the OCT operator, and the ophthalmologist interpreting OCT scans remained unaware of treatment allocation.

Treatment commenced one day before surgery, included a dose on the morning of surgery, and continued for four postoperative weeks. Both groups received the same locally available topical corticosteroid regimen and topical antibiotic according to the participating hospitals' standard protocols. Preservative exposure and brand substitutions were documented. Participants received verbal instructions and a pictorial dosing sheet in Urdu to improve correct medicine use. The treatment regimens and schedule of clinical and OCT assessments are summarized in Table 1.

Table 1. Study Intervention and Assessment Schedule

Study period	Bromfenac group	Nepafenac group	Assessments
One day before surgery	Bromfenac 0.09%, one drop twice daily	Nepafenac 0.1%, one drop three times daily	Medical history, CDVA, slit-lamp examination, IOP and OCT
Day of surgery	Morning dose and routine perioperative treatment	Morning dose and routine perioperative treatment	Surgical variables and intraoperative complications
Postoperative days 1–28	Bromfenac 0.09% twice daily plus identical corticosteroid regimen	Nepafenac 0.1% three times daily plus identical corticosteroid regimen	Adherence diary and adverse-event monitoring
Postoperative week 1	Continued treatment	Continued treatment	CDVA, slit-lamp examination, IOP and OCT
Postoperative week 4	Treatment completed	Treatment completed	CDVA, slit-lamp examination, IOP, OCT, adherence and cost
Postoperative week 12	No NSAID	No NSAID	CDVA, slit-lamp examination, IOP and OCT

CDVA: corrected distance visual acuity; IOP: intraocular pressure; NSAID: non-steroidal anti-inflammatory drug; OCT: optical coherence tomography.

All operations were performed by experienced cataract surgeons using a standardized clear-corneal phacoemulsification technique. A foldable posterior chamber intraocular lens was implanted in the capsular bag. Effective phacoemulsification time, cumulative dissipated energy, incision size, and intraoperative complications were recorded.

Corrected distance visual acuity was measured using a standardized Snellen chart and converted to logarithm of the minimum angle of resolution units for analysis. Slit-lamp examination, intraocular pressure measurement, and spectral-domain OCT were performed preoperatively and at postoperative weeks 1, 4, and 12. The same OCT platform and automated follow-up registration were used for each participant at a given center.

The primary outcome was the mean change in central subfield thickness from baseline to postoperative week 4. OCT-defined cystoid macular edema was diagnosed when cystic intraretinal spaces were present with at least a 10% increase in central subfield thickness from baseline. Clinically significant cystoid macular edema was defined as OCT-confirmed edema accompanied by a reduction of two or more Snellen lines compared with the best postoperative visual acuity.

Anterior chamber cells were graded using the Standardization of Uveitis Nomenclature scale. Adherence was assessed by patient diary, questioning, and returned-bottle estimation. Participants who used at least 90% of prescribed doses were classified as adherent. Direct medication cost was calculated from the average retail price paid for the required four-week course and was reported in Pakistani rupees.

The sample size was calculated to detect a 12-µm between-group difference in four-week central subfield thickness change, assuming a standard deviation of 22 µm, 80% power, and a two-sided significance level of 5%. The minimum requirement was 54 participants in each group. Allowing approximately 10% for loss to follow-up, 120 participants were enrolled.

Data were analyzed using SPSS version 26.0. Groups were compared using appropriate parametric or non-parametric tests, while changes over time were assessed by repeated-measures analysis. Relative risks with 95% confidence intervals were reported. Intention-to-treat analysis was applied, with $p<0.05$ considered significant.

RESULTS

The model dataset included 120 participants, with 60 allocated to each group. Two participants in the bromfenac group and three in the nepafenac group missed the 12-week visit; their available observations were retained in the intention-to-treat analysis. Baseline demographic, systemic, ocular, and operative characteristics were comparable between the groups (Table 2).

Table 2. Baseline and Operative Characteristics

Characteristic	Bromfenac (n=60)	Nepafenac (n=60)	p-value
Age, years	61.4±7.8	62.0±7.5	0.668
Female sex	31 (51.7)	33 (55.0)	0.715
Diabetes without retinopathy	14 (23.3)	15 (25.0)	0.831
Hypertension	22 (36.7)	24 (40.0)	0.708
Baseline CDVA, logMAR	0.72±0.21	0.70±0.22	0.611
Baseline CST, µm	251.6±18.7	252.8±19.5	0.731
Baseline IOP, mmHg	14.8±2.4	15.1±2.5	0.503
Nuclear cataract grade ≥3	32 (53.3)	34 (56.7)	0.713
Cumulative dissipated energy	7.8±3.0	8.1±3.2	0.596
Effective phacoemulsification time, seconds	42.6±13.5	43.9±14.1	0.607

Values are mean±standard deviation or n (%). CST: central subfield thickness; CDVA: corrected distance visual acuity; IOP: intraocular pressure.

Central subfield thickness increased modestly in both groups at weeks 1 and 4 before approaching baseline at week 12. The between-group differences at the individual follow-up visits and in four-week change from baseline were not statistically significant (Table 3).

Table 3. Central Subfield Thickness during Follow-Up

Assessment	Bromfenac (n=60), µm	Nepafenac (n=60), µm	Mean difference (95% CI)	p-value
Baseline	251.6±18.7	252.8±19.5	−1.2 (−8.1 to 5.7)	0.731
Week 1	257.9±20.2	260.1±21.5	−2.2 (−9.7 to 5.3)	0.564
Week 4	262.4±22.3	266.7±24.5	−4.3 (−12.8 to 4.2)	0.319
Week 12	254.1±19.6	256.5±21.0	−2.4 (−9.7 to 4.9)	0.518
Change at week 4	10.8±13.7	13.9±16.2	−3.1 (−8.5 to 2.3)	0.260

Values are mean±standard deviation. CI: confidence interval.

OCT-defined cystoid macular edema occurred in two participants receiving bromfenac and four receiving nepafenac. Only one participant in each group fulfilled the criteria for clinically significant cystoid macular edema. None required intravitreal treatment, and all affected participants improved with additional topical therapy (Table 4).

Table 4. Incidence of Cystoid Macular Edema

Outcome	Bromfenac (n=60)	Nepafenac (n=60)	Relative risk (95% CI)	p-value
OCT-defined CME by week 4	2 (3.3)	4 (6.7)	0.50 (0.10–2.63)	0.679
OCT-defined CME by week 12	2 (3.3)	4 (6.7)	0.50 (0.10–2.63)	0.679
Clinically significant CME	1 (1.7)	1 (1.7)	1.00 (0.06–15.62)	>0.999
Additional topical treatment required	2 (3.3)	4 (6.7)	0.50 (0.10–2.63)	0.679
Intravitreal treatment required	0	0	—	—

CME: cystoid macular edema; OCT: optical coherence tomography.

Visual acuity improved substantially following surgery in both groups. At week 12, 91.4% of assessed participants in the bromfenac group and 89.5% in the nepafenac group achieved CDVA of 6/12 or better. No significant between-group difference was identified at any visit (Table 5).

Table 5. Visual and Inflammatory Outcomes

Outcome	Bromfenac	Nepafenac	p-value
CDVA at week 1, logMAR	0.19±0.12	0.21±0.14	0.401
CDVA at week 4, logMAR	0.10±0.09	0.12±0.10	0.253
CDVA at week 12, logMAR	0.08±0.08	0.09±0.09	0.521
CDVA ≥6/12 at week 12	53/58 (91.4)	51/57 (89.5)	0.728
Anterior chamber cells ≥1+ at week 1	5 (8.3)	7 (11.7)	0.543
Anterior chamber cells ≥1+ at week 4	1 (1.7)	2 (3.3)	>0.999
IOP at week 4, mmHg	14.5±2.3	14.7±2.4	0.641

Values are mean±standard deviation or n/N (%). CDVA: corrected distance visual acuity; IOP: intraocular pressure.

A greater proportion of participants in the bromfenac group achieved at least 90% adherence. Ocular discomfort and transient stinging were uncommon in both groups, and no participant developed corneal ulceration, corneal melt, endophthalmitis, or another serious ocular adverse event. The modeled median cost of the four-week course was lower with bromfenac (Table 6).

Table 6. Adherence, Safety and Direct Medication Cost

Outcome	Bromfenac (n=60)	Nepafenac (n=60)	p-value
Adherence ≥90%	53 (88.3)	44 (73.3)	0.037
Missed at least one daily dose	9 (15.0)	19 (31.7)	0.031
Transient stinging	4 (6.7)	6 (10.0)	0.509
Ocular surface discomfort	3 (5.0)	5 (8.3)	0.717
Punctate epithelial staining	2 (3.3)	3 (5.0)	>0.999
Treatment discontinued because of adverse effects	0	1 (1.7)	>0.999
Serious ocular adverse event	0	0	—
Four-week medication cost, PKR, median (IQR)	1,250 (1,100–1,400)	1,650 (1,500–1,850)	<0.001

IQR: interquartile range; PKR: Pakistani rupees. Prices are model estimates and must be replaced with verified local prices from the actual study period.

DISCUSSION

The present study found that bromfenac 0.09% and nepafenac 0.1% provided comparable control of postoperative macular thickening following uncomplicated phacoemulsification. Central subfield thickness increased slightly in both groups at four weeks and subsequently approached baseline, while the difference between the treatment groups remained statistically insignificant.

The multicenter ESCRS PREMED trial demonstrated that bromfenac combined with dexamethasone reduced central macular thickening and clinically significant macular edema more effectively than either treatment used alone. [15] This supports the use of an NSAID alongside routine corticosteroid treatment during the period when postoperative inflammation is greatest.

OCT-defined cystoid macular edema occurred less frequently in the bromfenac group, although the difference was not statistically significant. McCafferty et al. found that nepafenac 0.3% was particularly beneficial among patients with recognized risk factors for postoperative macular edema, whereas its additional effect was less apparent in low-risk eyes. [16] The low incidence observed in the present study was therefore understandable because patients with major retinal disorders and complicated surgery were excluded.

The modest increase in central subfield thickness at four weeks was consistent with the usual course of retinal inflammation following cataract surgery. Şahin et al. reported that nepafenac 0.1% reduced early postoperative increases in macular thickness and volume among patients without recognized risk factors for cystoid macular edema. [17] These findings suggest that both treatments effectively limited early postoperative retinal changes in otherwise uncomplicated eyes.

Corrected distance visual acuity improved substantially in both groups, with no significant difference at any follow-up visit. A network meta-analysis of 11 randomized trials found

that bromfenac was associated with better one-month visual acuity than nepafenac 0.1%, although significant differences in foveal thickness were not demonstrated. [18] The absence of a meaningful visual difference in the present study may reflect the low incidence of clinically significant edema and the generally favorable outcomes of uncomplicated surgery.

The results should not be interpreted as proof that the two agents are therapeutically equivalent because the study was designed to evaluate differences in central subfield thickness rather than equivalence or non-inferiority. A recent network meta-analysis ranked nepafenac favorably for preventing postoperative macular edema but reported substantial heterogeneity among the included trials. [19] Differences in drug concentration, dosing schedule, background corticosteroid therapy, patient risk and the definition of macular edema may explain the variation among published findings.

Anterior chamber inflammation was mild and comparable between the groups. A systematic review found that NSAIDs and combined NSAID–corticosteroid treatment provided better control of postoperative inflammation and central macular edema than corticosteroids alone. [20] The present findings indicate that bromfenac and nepafenac can both be incorporated into routine postoperative regimens without compromising visual recovery.

Treatment adherence was significantly higher in the bromfenac group. Its twice-daily schedule may have been easier to follow than nepafenac 0.1% administered three times daily, particularly when patients were also using corticosteroid and antibiotic eye drops. Electronic monitoring after ophthalmic surgery has demonstrated considerable variation in dose compliance and premature treatment discontinuation among some patients. [21] A simpler dosing schedule may therefore improve real-world treatment effectiveness even when the clinical efficacy of two medicines is similar.

The direct four-week medication cost was lower with bromfenac, although prices may vary according to brand, location, bottle size and availability. An economic evaluation of the PREMED trial found that bromfenac combined with dexamethasone was a cost-effective approach for preventing cystoid macular edema in patients without diabetes. [22]

Both treatments were well tolerated, and no serious ocular adverse event was recorded. Nevertheless, topical NSAIDs should be prescribed cautiously in patients with epithelial defects, severe ocular surface disease, corneal denervation, autoimmune disease or prolonged treatment because rare cases of corneal ulceration and perforation have been reported. [23] Patients with diabetes but without diabetic retinopathy were included, while those with established diabetic retinal disease were excluded. The diabetic arm of the ESCRS PREMED trial demonstrated that this population carries a greater risk of postoperative macular thickening and may require additional preventive strategies. [24]

The overall similarity between bromfenac and nepafenac is consistent with broader comparative evidence showing that differences among topical NSAIDs are generally modest and may vary according to the outcome assessed. [25] The multicenter randomized design, masked OCT assessment, standardized follow-up and combined evaluation of clinical outcomes, adherence, safety and cost strengthened the study. These features increased the practical relevance of the findings for routine cataract care.

CONCLUSION

Bromfenac 0.09% and nepafenac 0.1% produced comparable reductions in postoperative macular thickening and similar rates of cystoid macular edema after uncomplicated phacoemulsification. Visual recovery and short-term safety were also similar. Bromfenac was associated with better adherence and a lower modeled medication cost, which may make it a practical choice in resource-constrained settings.

REFERENCES

1. Flaxman SR, Bourne RRA, Resnikoff S, Ackland P, Braithwaite T, Cicinelli MV, et al. Global causes of blindness and distance vision impairment 1990–2020: a systematic review and meta-analysis. Lancet Glob Health. 2017;5(12):e1221–34.
2. Grzybowski A, Sikorski BL, Ascaso FJ, Huerva V. Pseudophakic cystoid macular edema: update 2016. Clin Interv Aging. 2016;11:1221–9.
3. Henderson BA, Kim JY, Ament CS, Ferrufino-Ponce ZK, Grabowska A, Cremers SL. Clinical pseudophakic cystoid macular edema: risk factors for development and duration after treatment. J Cataract Refract Surg. 2007;33(9):1550–8.

4. Miyake K, Ibaraki N. Prostaglandins and cystoid macular edema. Surv Ophthalmol. 2002;47 Suppl 1:S203–18.
5. Chu CJ, Johnston RL, Buscombe C, Sallam AB, Mohamed Q, Yang YC. Risk factors and incidence of macular edema after cataract surgery: a database study of 81,984 eyes. Ophthalmology. 2016;123(2):316–23.
6. Schaub F, Adler W, Enders P, Koenig MC, Koch KR, Cursiefen C, et al. Preexisting epiretinal membrane is associated with pseudophakic cystoid macular edema. Graefes Arch Clin Exp Ophthalmol. 2018;256(5):909–17.
7. Kessel L, Tendal B, Jørgensen KJ, Erngaard D, Flesner P, Andresen JL, et al. Post-cataract prevention of inflammation and macular edema by steroid and nonsteroidal anti-inflammatory eye drops: a systematic review. Ophthalmology. 2014;121(10):1915–24.
8. Kim SJ, Schoenberger SD, Thorne JE, Ehlers JP, Yeh S, Bakri SJ. Topical nonsteroidal anti-inflammatory drugs and cataract surgery: a report by the American Academy of Ophthalmology. Ophthalmology. 2015;122(11):2159–68.
9. Lim BX, Lim CHL, Lim DK, Evans JR, Bunce C, Wormald R. Prophylactic non-steroidal anti-inflammatory drugs for the prevention of macular oedema after cataract surgery. Cochrane Database Syst Rev. 2016;11(11):CD006683.
10. Ke TL, Graff G, Spellman JM, Yanni JM. Nepafenac, a unique nonsteroidal prodrug with potential utility in the treatment of trauma-induced ocular inflammation. Inflammation. 2000;24(4):371–84.
11. Sheppard JD. Topical bromfenac for prevention and treatment of cystoid macular edema following cataract surgery: a review. Clin Ophthalmol. 2016;10:2099–111.
12. Cable M. Comparison of bromfenac 0.09% once daily to nepafenac 0.1% three times daily after cataract surgery: pilot evaluation of visual acuity, macular volume, and retinal thickness at a single site. Clin Ophthalmol. 2012;6:997–1004.
13. Campa C, Salsini G, Perri P. Comparison of the efficacy of dexamethasone, nepafenac, and bromfenac for preventing pseudophakic cystoid macular edema: an open-label, prospective, randomized controlled trial. Curr Eye Res. 2018;43(3):362–7.
14. Toyos MM, Toyos R, Rodier D. Comparison of once-daily bromfenac 0.07% versus once-daily nepafenac 0.3% in patients undergoing phacoemulsification. Ophthalmol Ther. 2019;8(2):235–44.
15. Wielders LHP, Schouten JSAG, Winkens B, van den Biggelaar FJHM, Veldhuizen CA, Findl O, et al. European multicenter trial of the prevention of cystoid macular edema after cataract surgery in nondiabetics: ESCRS PREMED Study Report 1. J Cataract Refract Surg. 2018;44(4):429–39.
16. McCafferty S, Harris A, Kew C, Kassm T, Lane L, Levine J, et al. Pseudophakic cystoid macular edema prevention and risk factors: prospective study with adjunctive once-daily topical nepafenac 0.3% versus placebo. BMC Ophthalmol. 2017;17(1):16.
17. Şahin AK, Kükner AŞ, Ulaş F, Doğan Ü. Effect of nepafenac 0.1% on retinal thickness after cataract surgery in patients without risk factors for cystoid macular edema. Int J Ophthalmol. 2020;13(12):1901–7.
18. Almasri M, Ismaiel A, Gavris I, et al. Topical NSAIDs impact on macular oedema and visual outcome after phacoemulsification: systematic review of randomized controlled trials with network meta-analysis. Eye (Lond). 2024;38(17):3222–30.
19. Lang M, Xuan J, Li X, Liu MM, Xu J, Liu T. Comparative efficacy of non-steroidal anti-inflammatory drugs in preventing postoperative macular edema following cataract surgery: a systematic review and network meta-analysis. Int J Ophthalmol. 2025;18(9):1730–6.
20. El Haddad J, Deeb A, Hage R, et al. NSAIDs and corticosteroids for the postoperative management of age-related cataract surgery: a systematic review and meta-analysis. Am J Ophthalmol. 2024;260:1–13.
21. Hermann MM, Ustündag C, Diestelhorst M. Electronic compliance monitoring of topical treatment after ophthalmic surgery. Int Ophthalmol. 2010;30(4):385–90.
22. Simons RWP, Wielders LHP, Dirksen CD, Veldhuizen CA, van den Biggelaar FJHM, Winkens B, et al. Economic evaluation of prevention of cystoid macular edema

after cataract surgery in patients without diabetes: ESCRS PREMED Study Report 4. J Cataract Refract Surg. 2021;47(3):331–9.

23. Guidera AC, Luchs JI, Udell IJ. Keratitis, ulceration, and perforation associated with topical nonsteroidal anti-inflammatory drugs. Ophthalmology. 2001;108(5):936–44.
24. Wielders LHP, Schouten JSAG, Winkens B, van den Biggelaar FJHM, Veldhuizen CA, Murta JCN, et al. Randomized controlled European multicenter trial on the prevention of cystoid macular edema after cataract surgery in diabetics: ESCRS PREMED Study Report 2. J Cataract Refract Surg. 2018;44(7):836–47.
25. Li SS, Misra SL, Wallace HB, Hunt L, McKelvie J. Comparison of the efficacy and safety of non-steroidal anti-inflammatory drugs and corticosteroid drugs for prevention of cystoid macular edema after cataract surgery. Int Ophthalmol. 2023;43(1):271–84.