Türkiye Klinikleri Oftalmoloji Dergisi
Turkiye Klinikleri Journal of Ophthalmology
Turkiye Klinikleri J Ophthalmol.

ORIGINAL RESEARCH ORİJİNAL ARAŞTIRMA

DOI: 10.5336/ophthal.2024-104173

Ophthalmologists' Opinions and Practices in Türkiye Regarding Immediate Sequential Bilateral Cataract Surgery: A Survey Study: Cross Sectional Study

Türkiye'deki Oftalmologların Hemen Ardışık Bilateral Katarakt Cerrahisine İlişkin Görüş ve Uygulamaları: Bir Anket Çalışması: Kesitsel Araştırma

Berire Şeyma DURMUŞ ECE[a], Zübeyir YOZGAT[a], Mehmet Uğur IŞIK[a], Erdem YÜKSEL[b]

[a]Kastamonu University Faculty of Medicine, Department of Ophthalmology, Kastamonu, Türkiye
[b]Gazi University Faculty of Medicine, Department of Ophthalmology, Ankara, Türkiye

ABSTRACT Objective: To evaluate the opinions and practices of ophthalmologists in Türkiye about immediate sequential bilateral cataract surgery (ISBCS) through an online survey. **Material and Methods:** The ISBCS survey was sent to ophthalmologists with accessible contact information in Türkiye. This survey examined ophthalmologists' concerns, case selection, reasons for reluctance, and factors that could potentially influence their practices. **Results:** 169 (43.7%) of the 389 survey recipients participated. 35 (20.7%) participants reported performing ISBCS, while 130 (76.9%) reported not performing ISBCS. 4 (2.4%) participants reported they had previously performed ISBCS but no longer did. Ophthalmologists with over 10 years of professional experience exhibited a significantly higher preference for ISBCS (p=0.027). It was determined that the patient's difficulty in reaching the hospital and the availability of separate surgical instruments for the right and left eyes were important factors for preferring ISBCS. Among ophthalmologists performing ISBCS, it was found that the majority preferred to use ISBCS specifically for senile cataract surgeries performed under high-risk general anesthesia. The main reasons why ophthalmologists didn't do ISBCS were the risk of endophthalmitis (87.6%) and medicolegal issues (86.9%). **Conclusion:** The majority of ophthalmologists in Türkiye do not perform ISBCS, approximately 20% do. For ophthalmologists, ISBCS is a concern for medicolegal considerations. Although a small percentage of ophthalmologists firmly stated that they would never perform ISBCS under any circumstances, there is generally a positive attitude towards ISBCS when specific conditions are met. To ensure eligible patients can benefit from ISBCS, assessing the existing barriers and developing national and international guidelines is crucial.

Keywords: Cataract; phacoemulsification; survey

ÖZET Amaç: Bu çalışmada, Türkiye'deki oftalmologların hemen ardışık bilateral katarakt cerrahisi [immediate sequential bilateral cataract surgery (ISBCS)] hakkındaki görüş ve uygulamalarının bir anket aracılığıyla değerlendirilmesi amaçlanmıştır. **Gereç ve Yöntemler:** ISBCS uygulamaları ile ilgili anket, Türkiye'de oftalmolog olarak çalışan ve iletişim bilgileri erişilebilir olan göz doktorlarına gönderildi. Anket metni oftalmologların endişelerini, vaka seçimini, ISBCS hakkındaki isteksizlik nedenlerini ve ISBCS uygulamalarını potansiyel olarak etkileyebilecek faktörleri incelemek üzere tasarlandı. **Bulgular:** Anket metni 389 kişiye ulaştırıldı ve 169 (%43,7) kişi ankete katılım sağladı. Katılımcıların 35'i (%20,7) ISBCS yaptığını, 130'u (%76,9) ise ISBCS yapmadığını bildirdi. Dört (%2,4) katılımcı daha önce ISBCS yaptığını ancak artık yapmadığını söyledi. On yıldan fazla mesleki deneyimi olan göz doktorlarının ISBCS'si anlamlı yüksek tercih ettiği saptandı (p=0,027). Hastanın hastaneye ulaşımının zorluğu, sağ ve sol göz için ayrı cerrahi aletlerin bulunmasının ISBCS'yi tercih etmede önemli faktörler olduğu belirlendi. ISBCS uygulayan göz doktorları arasında çoğunluğun ISBCS'yi özellikle yüksek riskli genel anestezi altında yapılan senil katarakt ameliyatları için tercih ettiği belirlendi. Göz doktorlarının ISBCS yapmamasının ana nedenleri endoftalmi riski (%87,6) ve adli sorunlar (%86,9) idi. **Sonuç:** Sonuç olarak Türkiye'deki oftalmologların büyük kısmı ISBCS uygulamazken, yaklaşık %20'sinin ISBCS uygulamakta olduğunu saptadık. Bununla birlikte ISBCS için medikolegal kaygılar devam etmektedir. Oftalmologların az bir kısmı hiçbir durumda ISBCS uygulamayacağını ifade ederken, uygun şartların sağlanması hâlinde genel olarak ISBCS'ye karşı olumlu tutum mevcuttur. ISBCS'nin hastaya ve topluma sağlayabileceği avantajlardan uygun hastaların faydalanabilmesi adına ulusal/uluslararası kılavuzlar oluşturulmasına ihtiyaç vardır.

Anahtar Kelimeler: Katarakt; fakoemülsifikasyon; anket

Correspondence: Erdem YÜKSEL
Gazi University Faculty of Medicine, Department of Ophthalmology, Ankara, Türkiye
E-mail: drerdemyuksel@gmail.com

Peer review under responsibility of Turkiye Klinikleri Journal of Ophthalmology.

Received: 30 May 2024 ***Received in revised form:*** 01 Sep 2024 ***Accepted:*** 18 Sep 2024 ***Available online:*** 24 Sep 2024

Cataract is one of the leading causes of visual impairment worldwide.[1] Cataract-related visual impairment has been associated with several outcomes, including depression, increased falls and fractures, decreased quality of life, and increased mortality rates in elderly patients.[2-5] Surgical correction of vision loss caused by cataracts has been associated with better long-term survival in elderly individuals.[4] These findings highlight the significance of early diagnosis and rehabilitation of visual problems in reducing the harmful effects of visual impairment in elderly patients.

With the growing elderly population worldwide, there has been an rise in the number of patients requiring cataract surgery, leading to longer waiting lists for ophthalmologists and increasing the burden of cataract surgery.[6] The conventional method for treating cataracts is delayed sequential bilateral cataract surgery (DSBCS), performed with a gap of several days or weeks between the surgery dates for each eye. Recently, immediate sequential bilateral cataract surgery (ISBCS), a simultaneous same-day cataract surgery, has gained popularity as a potential method to increase cataract surgery productivity.[7]

Although ISBCS was first reported in the literature in the 1950s, it remains controversial among ophthalmologists.[8] Despite opinions in the literature that ISBCS is safe in terms of complications and satisfaction in terms of visual acuity and patient satisfaction, there are opinions arguing that ISBCS should not be the standard treatment due to concerns such as bilateral complications (especially endophthalmitis) and unexpected postoperative refractive error.[9,10]

This study aims to evaluate the opinions and practices of ophthalmologists in Türkiye regarding ISBCS, as well as the reasons for choosing or not choosing ISBCS using an online survey.

MATERIAL AND METHODS

The ethical approval for this survey study was obtained from the Kastamonu University Faculty of Medicine, Clinical Research Ethics Committee (date: February 8, 2023, no: 2023-KAEK-17). This study adhered to the principles of the Helsinki Declaration.

The survey questions regarding ophthalmologists' attitudes and behaviors toward ISBCS were obtained by modifying previously published survey texts to allow a more accurate comparative analysis.[11,12] The primary aim of the survey questions is to assess the areas of importance and case selection criteria for ophthalmologists who perform ISBCS, as well as to analyze the primary concerns and reasons for reluctance among ophthalmologists who do not perform ISBCS. Additionally, the survey aims to investigate the factors that may contribute to behavioral changes in ophthalmologists' current practices.

The survey study was prepared in a web-based environment using SurveyMonkey (http://www.surveymonkey.com). The criteria for sending the survey invitation were set as working as an ophthalmologist in Türkiye and having accessible contact information. Participants who were informed about the survey content and the study and who agreed to participate were included in the study. The survey remained active for one month after being sent out. In the survey text, participants were asked to rate the importance of specific situations using a Likert-based scale. The responses were collected and analyzed anonymously using the software.

After asking four questions about the participants' essential characteristics (title, professional experience; from ophthalmology residency training onwards, types of institutions, and professional interests), they were asked whether they preferred ISBCS. Based on their responses to this question (yes, no, I used to do it before, but I do not do it anymore), the survey was divided into three groups, with different questions for each group. For ophthalmologists who perform ISBCS, questions were asked regarding the duration of performing ISBCS, frequency of ISBCS implementation, patient groups they prefer for ISBCS, and factors they consider significant in patient selection and during the ISBCS procedure. For ophthalmologists who do not perform ISBCS, questions were asked regarding the factors they consider significant in their decision not to perform ISBCS and the factors that may influence their future decision to perform ISBCS. Ophthalmologists who discontinued performing ISBCS were asked questions regarding the reasons for their decision (Appendix 1).

APPENDIX 1: Survey text.

The purpose of this survey is to evaluate ophthalmologists' attitudes towards performing "immediate sequential bilateral cataract surgery" (ISBCS). Thank you for your participation in the survey.

1. Please select your professional status/title
   - ☐ Resident
   - ☐ Specialist
   - ☐ Assistant Professor
   - ☐ Associate Professor
   - ☐ Professor
2. Please select the type of institution you are working for
   - ☐ Education and Research / University Hospital
   - ☐ State Hospital
   - ☐ Private hospital
   - ☐ Clinic
3. Please select your professional experience
   - ☐ Less than 1 year
   - ☐ 1-5 years
   - ☐ 5-10 years
   - ☐ More than 10 years
4. Do you perform immediate sequential bilateral cataract surgery (ISBCS)?
   - ☐ Yes (Part A)
   - ☐ No (Part B)
   - ☐ I used to do it before, but I don't do it anymore (Part C)

A. Survey Questions for Participants Who Have Performed ISBCS

1. How long have you been practicing ISBCS?
   - ☐ Less than 1 year
   - ☐ 1-2 years
   - ☐ 2-5 years
   - ☐ More than 5 years
2. How many patients do you perform ISBCS per month, on average?
   - ☐ 1-5 patients per month
   - ☐ 6-15 patients per month
   - ☐ 16-20 patients per month
   - ☐ >20 patients per month
3. Please select the approximate percentage of ISBCS patients of all cataract surgeries you have performed.
   - ☐ 1-25 %
   - ☐ 26-50 %
   - ☐ 51-75 %
   - ☐ 76-100 %
4. What percentage of patients, whom you consider suitable for ISBCS, decide to proceed with ISBCS after informed consent?
   - ☐ 1-25 %
   - ☐ 26-50 %
   - ☐ 51-75 %
   - ☐ 76-100 %
5. Do you administer intracameral antibiotics as standard when administering ISBCS?
   - ☐ Yes
   - ☐ No
6. In which of the following situations do you prefer ISBCS? (Multiple answers possible)
   - ☐ Senile cataract surgery under topical anesthesia
   - ☐ Senile cataract surgery under general anesthesia
   - ☐ Senile cataract surgery under high-risk general anesthesia
   - ☐ Congenital cataract surgery
   - ☐ Refractive lens Exchange
   - ☐ Phakic intraocular lens implantation
   - ☐ Others
7. How important are the listed situations to you when making the decision to perform ISBCS?

	Very Important	Important	Quite Important	Not Important
Patient's request				
Patient advantages (Rapid visual recovery, less hospital visits, less time lost, etc.)				
Difficulties in reaching the hospital				
Advantages for organization				
Potential cost effective for the hospital and society				
Availability of separate surgical instruments and products for the right and left eye				

APPENDIX 1: Survey text *(contunied)*.

8. How important do you think the following conditions are during the ISBCS implementation?

	Very Important	Important	Quite Important	Not Important
Exclusion of high-risk eyes				
The absence of additional risk for endophthalmitis in the patient/eye.				
Re-sterilization of the surgeon and surgical team between the two eyes				
The surgeon having experience with ISBCS				
Availability of instruments that have gone through different sterilization cycles for each eye				
Availability of medicine, solutions, and cannulas with different batch numbers				
Ensuring that the patient's informed consent is documented				
Postoperative 1st day examination by ophthalmologist				

B. Survey Questions for Participants Who Have Not Performed ISBCS

1. How important are the listed situations to you in the decision not to perform ISBCS?

	Very Important	Important	Quite Important	Not Important
No evidence of effectiveness				
Not considering ISBCS essential				
Risk of endophthalmitis				
Risk of wrong IOL power calculation				
Risk of bilateral complications (TASS, CME, etc.)				
Reduction in reimbursement or in the surgeon's performance rating				
Medicolegal issues if ISBCS goes wrong				
Insufficient facilities or support staff				
Due to the enormous number of patients waiting, to ensure everyone gets cataract surgery for the first eye first				

2. Would you consider choosing ISBCS in any of the situations described below in the future? (Multiple answers possible)
   - ☐ Senile cataract surgery under topical anesthesia
   - ☐ Senile cataract surgery under general anesthesia
   - ☐ Senile cataract surgery under high-risk general anesthesia
   - ☐ Congenital cataract surgery
   - ☐ Refractive lens Exchange
   - ☐ Phakic intraocular lens implantation
   - ☐ Others (.....)
3. Please select the factors that may potentially change your decision not to perform ISBCS. (Multiple answers possible)
   - ☐ I would not consider ISBCS under any circumstances
   - ☐ Improved evidence of safety and effectiveness
   - ☐ Hospital approval
   - ☐ Presence of a guide for ISBCS
   - ☐ Training programs for ISBCS
   - ☐ Specialist society approval
   - ☐ Availability of prepacked right eye/left eye instruments
   - ☐ Improved availability of intracameral antibiotics

C.Survey Questions for Participants Who Have Ceased Performing ISBC

1. What are the reasons for your decision to discontinue performing ISBCS? (Multiple answers possible)
   - ☐ I no longer believe in the benefits of ISBCS
   - ☐ I encountered bilateral complications after ISBCS.
   - ☐ I received advice from colleagues about not performing ISBCS
   - ☐ I discontinued ISBCS due to a reduction in reimbursement or surgeon performance rating.
   - ☐ My hospital does not allow ISBCS
   - ☐ Others (.....)

Data were analyzed using SPSS Windows 20 software (IBM SPSS Inc., Chicago, IL, USA). Quantitative data were analyzed using descriptive statistics. Statistical differences between categorical variables were analyzed using the chi-square test. A value of $p<0.05$ was considered statistically significant.

RESULTS

The survey link was sent electronically to 389 ophthalmologists practicing in Türkiye who had accessible contact addresses. Three of these invitations were not delivered due to the survey software automatically rejecting the email addresses. Among the 386 individuals who received thesurvey link, 169 (43.7%) completed it. The average survey completion time was 2 minutes and 26 seconds.

35 participants (20.7%) indicated that they performed ISBCS, while 130 participants (76.9%) stated that they did not. 4 participants (2.4%) indicated that they had previously performed ISBCS but had now discontinued it. Table 1 presentsthe participants' titles (professional status), types of institutions, and professional experience. The comparison of ISBCS performance rates by professional status and institution revealed no statistically significant differences ($p=0.304$). In the analysis based on professional experience, using 10 years as the cutoff, it was determined that ophthalmologists with more than 10 years of experience (n=83) had a significantly higher preference for ISBCS compared to those with less than 10 years of experience (n=86) ($p=0.027$).

The participants' professional interests are shown in Table 2. Due to the possibility of participants selecting multiple professional interest areas, the number of preferences may exceed the number of survey participants (Table 2). In the analysis based on professional interest areas, there was no statistically significant difference between interest areas and ISBCS preferences in any group ($p>0.05$).

PARTICIPANTS PERFORMING ISBCS

Of the survey participants, 35 (20.7%) indicated that they currently perform ISBCS. Among the ISBCS practitioners, 42.8% have been performing ISBCS for 5 years or more, 11.4% for 2-5 years, 20.0% for 1-2 years, and 25.7% for less than 1 year.

Among ophthalmologists who perform ISBCS, 28 (80.0%) reported performing it on an average of 1-5 patients per month, while 7 (20.0%) reported

TABLE 1: General characteristics of survey participants.

General characteristics	Total participants (n=169)	Participants performing ISBCS (n=35)	Participants not performing ISBCS (n=130)	Participants who discontinued ISBCS (n=4)
Titles/professional status				
Resident*	25 (100%)	5 (20.0%)	20 (80.0%)	0
Specialist	85 (100%)	13 (15.3%)	69 (81.1%)	3 (3.5%)
Assistant professor	15 (100%)	3 (20.0%)	11 (73.3%)	1 (6.6%)
Associate professor	25 (100%)	8 (32.0%)	17 (68.0%)	0
Professor	19 (100%)	6 (31.6%)	13 (68.4%)	0
Institution				
Education and research/ University hospital	104 (100%)	19 (18.3%)	85 (81.7%)	0
State hospital	15 (100%)	2 (13.3%)	12 (80.0%)	1 (6.6%)
Private hospital	44 (100%)	12 (27.3%)	29 (65.9%)	3 (6.8%)
Clinic	6 (100%)	2 (33.3%)	4 (66.7%)	0
Professional experience				
Less than 1 year	7 (100%)	0	7 (100%)	0
1-5 years	41 (100%)	8 (19.5%)	33 (80.5%)	0
5-10 years	38 (100%)	4 (10.5%)	32 (84.2%)	2 (5.2%)
More than 10 years	83 (100%)	23 (27.7%)	58 (69.8%)	2 (2.4%)

*Under the supervision of the responsible ophthalmologist; ISBCS: Immediate sequential bilateral cataract surgery

TABLE 2: Professional interests and ISBCS performances of survey participants.

Professional Interests	Participants performing ISBCS (n=35)	Participants not performing ISBCS (n=130)	Participants who discontinued ISBCS (n=4)
Cataract and refractive surgery (n=120)	28 (23.3%)	88 (73.3%)	4 (3.3%)
General ophthalmology (n=93)	16 (17.2%)	74 (79.5%)	3 (3.2%)
Cornea and ocular surface (n=66)	13 (19.6%)	50 (75.7%)	3 (4.5%)
Medical retina (n=61)	9 (14.7%)	50 (81.9%)	2 (3.2%)
Oculoplastic surgery (n=54)	8 (14.8%)	43 (79.6%)	3 (5.5%)
Vitreoretinal surgery (n=39)	8 (20.5%)	30 (76.9%)	1 (2.5%)
Contact lens (n=37)	4 (10.8%)	32 (86.4%)	1 (2.7%)
Glaucoma (n=32)	8 (25.0%)	23 (71.8%)	1 (3.1%)
Strabismus (n=31)	4 (12.9%)	26 (83.8%)	1 (3.2%)
Uvea (n=24)	5 (20.8%)	18 (75.0%)	1 (4.1%)
Neuro-ophthalmology (n=12)	3 (25.0%)	9 (75.0%)	0
Ocular infections (n=11)	0	10 (90.9%)	1 (9.0%)
Ocular traumatology (n=11)	1 (9.0%)	10 (90.9%)	0
Ocular oncology (n=2)	0	2 (100%)	0
Electrodiagnostic (n=2)	0	2 (100%)	0

ISBCS: Immediate sequential bilateral cataract surgery.

performing it on 6-15 patients. No surgeon was identified who performs it more frequently (16-20 or >20 patients per month). Among all the cataract surgeries they perform, 29 ophthalmologists (82.8%) indicated that ISBCS patients make up approximately 1-25% of their cases, while 6 (17.1%) stated it to be in the range of 25-50%. No surgeon was found to perform it at a higher rate (51-75% or 76-100%).

22.8% of ophthalmologists stated that 76-100% of the patients they deemed suitable for ISBCS decided to proceed with ISBCS after informed consent, while 45.7% indicated that 1-25% of the patients they deemed suitable for ISBCS decided to proceed with it (Figure 1). All ISBCS performers (n=35, 100%) stated using intracameral antibiotics as a standard procedure.

The types of surgical procedures for which participants would prefer ISBCS are shown in Figure 2. Participants were able to select multiple options. It was determined that the participants preferred ISBCS most during senile cataract surgery under high-risk general anesthesia (57.6%) (Figure 2). Additionally, it was found that 28.6% of participants preferred ISBCS for congenital cataract surgery (Figure 2).

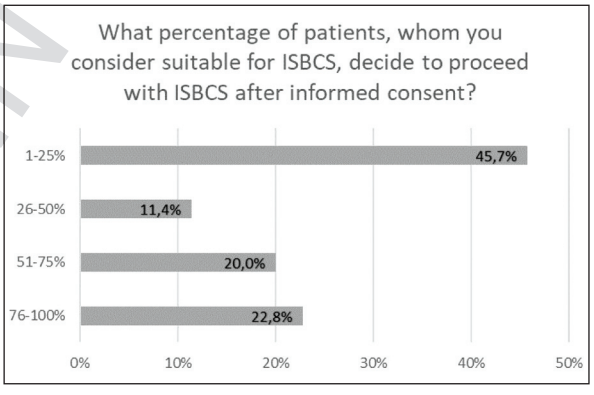

FIGURE 1: The percentage of patients deciding to proceed with ISBCS.
ISBCS: Immediate sequential bilateral cataract surgery.

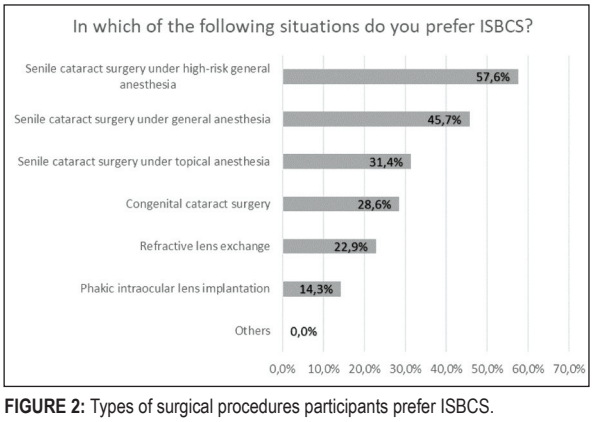

FIGURE 2: Types of surgical procedures participants prefer ISBCS.
ISBCS: Immediate sequential bilateral cataract surgery.

The factors considered important by participants who perform ISBCS in their decision-making and implementation of ISBCS are shown in Table 3. It was determined that the patient's difficulty in reaching the hospital and the availability of separate surgical instruments for the right and left eyes were important factors for preferring ISBCS. Participants considered ensuring informed consent documents (77.1% very important, 22.8% important) and the re-sterilization of the surgeon and surgical team between the two eyes (62.8% very important, 31.8% important) to be important conditions for ISBCS practice (Table 3).

PARTICIPANTS NOT PERFORMING ISBCS

130 survey participants (76.9%) indicated that they did not perform ISBCS. The risk of endophthalmitis (87.6%), medicolegal issues if ISBCS goes wrong (86.9%), and the risk of bilateral complications (72.3%) were the most important factors influencing the decision not to perform ISBCS (Table 4). Participants preferred senile cataract surgery under high-risk general anesthesia the most (58.4%) among the potential clinical conditions for which they might in the future consider selecting ISBCS. Participants could choose multiple options for factors that might potentially change their thoughts about not performing ISBCS. "Availability of prepacked right eye/left eye instruments" was identified as the most frequently required factor (60.0%) (Figure 3).

Ophthalmologists (n=4) who previously performed ISBCS and have since discontinued it were able to choose multiple reasons for their discontinuation. 50% of the ophthalmologists (n=2) who discontinued ISBCS stated that they no longer believed in its benefits, while 25% (n=1) cited the reduction in reimbursement as the reason. Another 25% (n=1) mentioned other reasons, such as the lack of additional patient satisfaction, for discontinuing ISBCS.

TABLE 3: Factors considered important by participants performing ISBCS (n=35).

		n (%)		
		Very important	**Important**	**Quite important**	**Not important**
Factors considered important in ISBCS decision-making	Patient's request	8 (22.8)	13 (37.1)	7 (20.0)	7 (20.0)
	Patient advantages (Rapid visual recovery, less hospital visits, less time lost, etc.)	9 (25.7)	17 (48.5)	3 (8.5)	6 (17.1)
	Difficulties in reaching the hospital	12 (34.2)	16 (45.7)	6 (17.1)	1 (2.8)
	Advantages for organization	6 (17.1)	10 (28.5)	7 (20.0)	12 (34.2)
	Potential cost effective for the hospital and society	7 (20.0)	13 (37.1)	6 (17.1)	9 (25.7)
	Availability of separate surgical instruments and products for the right and left eye	12 (34.2)	11 (31.4)	4 (11.4)	8 (22.8)
Factors considered important in ISBCS implementation	Exclusion of high-risk eyes	15 (42.8)	13 (37.1)	4 (11.4)	3 (8.5)
	The absence of additional risk for endophthalmitis in the patient/eye.	18 (51.4)	14 (40.0)	0	3 (8.5)
	Re-sterilization of the surgeon and surgical team between the two eyes	22 (62.8)	11 (31.4)	0	2 (5.7)
	The surgeon having experience with ISBCS	10 (28.5)	15 (42.8)	6 (17.1)	4 (11.4)
	Availability of instruments that have gone through different sterilization cycles for each eye	20 (57.1)	10 (28.5)	3 (8.5)	2 (5.7)
	Availability of medicine, solutions, and cannulas with different batch numbers	15 (42.8)	11 (31.4)	5 (14.2)	4 (11.4)
	Ensuring that the patient's informed consent is documented	27 (77.1)	8 (22.8)	0	0
	Postoperative 1st day examination by ophthalmologist	20 (57.1)	11 (31.4)	2 (5.7)	2 (5.7)

ISBCS: Immediate sequential bilateral cataract surgery.

TABLE 4: Factors considered important by participants not performing ISBCS (n=130).

		n (%)			
		Very Important	Important	Quite Important	Not Important
Factors considered important in the decision not to perform ISBCS	No evidence of effectiveness	24 (18.4)	52 (40.0)	26 (20.0)	28 (21.5)
	Not considering ISBCS essential	23 (17.6)	66 (50.7)	28 (21.5)	13 (10.0)
	Risk of endophthalmitis	114 (87.6)	16 (12.3)	0	0
	Risk of wrong IOL power calculation	31 (23.8)	47 (36.1)	35 (26.9)	17 (13.1)
	Risk of bilateral complications (TASS, CME, etc.)	94 (72.3)	29 (22.3)	6 (4.6)	1 (0.7)
	Reduction in reimbursement or in the surgeon's performance rating	5 (3.8)	21 (16.1)	37 (28.4)	67 (51.5)
	Medicolegal issues if ISBCS goes wrong	113 (86.9)	14 (10.7)	3 (2.3)	0
	Insufficient facilities or support staff	34 (26.1)	37 (28.4)	30 (23.1)	29 (22.3)
	Due to the enormous number of patients waiting, to ensure everyone gets cataract surgery for the first eye first	16 (12.3)	43 (33.1)	43 (33.1)	28 (21.53)

ISBCS: Immediate sequential bilateral cataract surgery; IOL: Intraocular lens; TASS: Toxic anterior segment syndrome; CME: Cystoid macular edema.

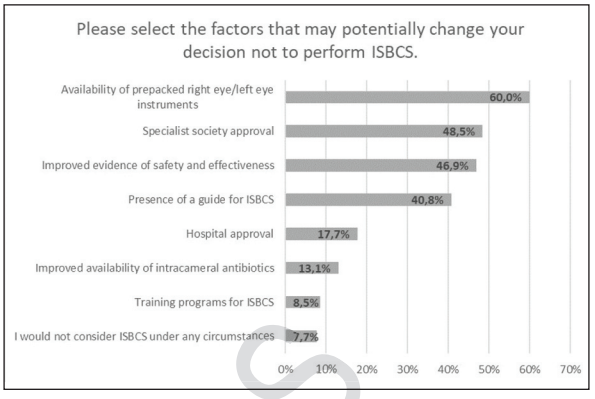

FIGURE 3: Factors that may change the decision not to perform ISBCS.
ISBCS: Immediate sequential bilateral cataract surgery.

DISCUSSION

This study investigated the frequency of ophthalmologists in Türkiye choosing or not choosing ISBCS, their reasons for choosing ISBCS, and the barriers to ISBCS. While most ophthalmologists do not perform ISBCS, 20.7% reported performing the procedure. When our results are compared with the studies in the literature, there are also studies with similar or higher ISBCS rates. 13.9% of the participants in a comparable survey by Lee et al. in the UK reported performing ISBCS.[11] In a survey conducted by Rush et al. in the United States, 25.2% of the participants reported performing ISBCS.[13] In a survey study by Spekreijse et al. in the Netherlands, 27.3% of the participants reported performing ISBCS.[14] Mills et al. conducted a survey study in Europe where 67.2% of the participants reported performing ISBCS.[12] Amsden et al. conducted a survey study in Northern California, where 86% of the participants reported performing ISBCS.[15] The Northern California survey revealed the highest ISBCS implementation rate among the current survey studies, although the authors did not specify the frequency of ISBCS implementation in the survey. They only confirmed that a minimum of one ISBCS procedure was performed annually. The different rates observed in surveys conducted in various regions may be attributable to ophthalmologists' preferences and infrastructure capabilities in those regions. In addition, differences in sample selection criteria and sample sizes among the survey studies could also account for the disparities in reported rates.

There were no significant differences in ISBCS preference among the ophthalmologists who participated in our study based on their professional status or the type of institution where they worked. To our knowledge, this is the first study to examine the relationship between the individual characteristics of ophthalmologists (title, professional experience, institution of work, and professional interests) and their ISBCS preferences. When we set the threshold for professional experience at 10 years, we found that those with more than 10 years of experience preferred ISBCS significantly more. In addition to patient and infrastructure factors, our findings indicate that the surgeon's individual experience influences their preference for ISBCS.

Ophthalmologists currently performing ISBCS in Türkiye stated that the percentage of patients who underwent ISBCS among all cataract surgeries, mostly (82.8%) was 1-25%. The fact that ISBCS is performed on a relatively low patient volume is consistent with the literature.[12,14] These results can indicate that ISBCS is not a standard surgical procedure, but a preferred practice in selected patient populations.

ISBCS was most preferred when senile cataract surgery under high-risk general anesthesia was required. We think ISBCS is preferred because it eliminates the need for multiple anesthesia sessions. Anesthesia is also necessary for congenital cataract surgery. Due to the emotional and behavioral immaturity of pediatric patients relative to adults, preoperative anxiety and general anesthesia have been linked to postoperative negative behavior.[16,17] In our study, a relatively small proportion of ophthalmologists (28.6%) reported performing ISBCS in congenital cataract surgery. This may be attributed to the limited data on ISBCS in the pediatric population.

The majority of participants cited the difficulty of hospital access as a significant factor in their choice of ISBCS. This factor is especially important for patients living in rural areas, as it relates to the cost, duration, and need for a companion during transportation. Transportation cost and duration were identified as barriers to cataract surgery in a study in which 51% of patients used public transportation, and the average travel time for surgery was reported to be 35-77 minutes.[18]

Since patients have the freedom to choose between ISBCS and DSBCS, obtaining informed consent and the patient's willingness to undergo ISBCS are among the key principles recommended by the International Society of Bilateral Cataract Surgeons.[19] Amsden et al. reported that 27% of ophthalmologists who did not prefer ISBCS in their study were concerned about not having enough interview time to understand the patient's preference.[15] In a study investigating the validity of written informed consent prior to glaucoma surgery, it was found that even when sufficient time was allocated (91.8% of doctors reported allocating enough time to explain the procedures), only half of the patients had a moderate level of understanding regarding surgical issues.[20] These data explain the ophthalmologists' identification of "ensuring that the patient's informed consent is documented" as the most significant condition (77.1% very significant) during the ISBCS in our study. Studies on developing standardized written consent forms for bilateral cataract surgery may alleviate the current difficulty.

The risk of endophthalmitis was the most important factor in the preference of ophthalmologists who did not perform ISBCS. This result is consistent with similar studies in the literature.[11,12,14] Among the factors that will change the decision not to apply ISBCS, the choice of "availability of prepacked right eye/left eye instruments" is another indicator of this concern. These results are in line with the elective nature of cataract surgery and the potential negative outcomes of ISBCS if performed under inappropriate conditions. However, in a study by Arshinoff and Bastianelli, they determined the incidence of postoperative endophthalmitis in ISBCS to be 0.006% with the use of intracameral antibiotics.[21] In our study, all ophthalmologists performing ISBCS stated that they used intracameral antibiotics, with a rate of 100%.

We have determined that the possibility of medicolegal problems if ISBCS goes wrong is an important factor in the decision of ophthalmologists not to perform the procedure. Although a decrease in reimbursement has been cited as a financial barrier to

ISBCS in the literature, most (51.5%) of the ophthalmologists in our survey did not find the reduction in reimbursement caused by ISBCS to be significant.[13,22] These findings indicate that ophthalmologists' reluctance to perform ISBCS is not due to financial considerations but rather the fear of medicolegal issues. The fear of being accused of malpractice can lead to a defensive approach toward patient care. However, only 7.7% of the ophthalmologists in our study indicated that they would never perform ISBCS. The fact that the majority do not have a definite negative attitude toward ISBCS and that specialist society approval and the presence of a guideline for ISBCS are among the factors that will change the decision not to perform ISBCS emphasizes the need to develop national/international guidelines.

The risk of the wrong intraocular lens (IOL) power calculation was found to be moderately significant by most ophthalmologists who did not choose to perform ISBCS. However, the number of ophthalmologists who found this risk to be of low importance is also not small (26.9% slightly important, 13.1% insignificant). This may be due to the fact that the adjustment of the IOL power of the second eye according to the result of the first eye is controversial and that additional correction between the two eyes has become less important with the new generation formulas. Amsden et al. reported that a majority of ophthalmologists use less than 25% of the first eye's refractive data to guide their choice of IOL for the second eye.[15]

Our study has some limitations, with the small sample size being the most significant. Therefore, our study is limited in reflecting the opinions of non-respondents to the survey. Nevertheless, given the absence of prior research evaluating the opinions and attitudes of ophthalmologists in Türkiye regarding ISBCS, our findings provide a preliminary assessment of the approach to ISBCS, addressing negative factors and proposing solutions to concerns, albeit based on a relatively small sample. Research is needed on this subject that will be conducted with a broader and more diverse participant base and will include sub-analyses in regions of the country with varying infrastructures. Another limitation is that our study did not specifically examine the practices of ophthalmologists who do not perform ISBCS regarding the inclusion of cataract surgery in their daily routines. Therefore, some participants who reported not performing ISBCS may have chosen this option not because they doubt the efficacy of ISBCS, but because cataract surgery is not the primary focus of their daily practice.

CONCLUSION

In conclusion, we found that the majority of ophthalmologists in Türkiye do not perform ISBCS, while about 20% do. ISBCS is still the subject of medicolegal concerns. While a small percentage of ophthalmologists' state that they would never perform ISBCS under any circumstances, there is a generally positive attitude towards ISBCS when the appropriate conditions are met. To ensure that eligible patients can reap the benefits of ISBCS, it is necessary to develop national/international guidelines.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Berire Şeyma Durmuş Ece, Erdem Yüksel;* ***Design:*** *Berire Şeyma Durmuş Ece, Zübeyir Yozgat;* ***Control/Supervision:*** *Berire Şeyma Durmuş Ece, Erdem Yüksel;* ***Data Collection and/or Processing:*** *Berire Şeyma Durmuş Ece, Zübeyir Yozgat, Mehmet Uğur Işık, Erdem Yüksel;* ***Analysis and/or Interpretation:*** *Berire Şeyma Durmuş Ece, Erdem Yüksel;* ***Literature Review:*** *Berire Şeyma Durmuş Ece, Mehmet Uğur Işık;* ***Writing the Article:*** *Berire Şeyma Durmuş Ece, Erdem Yüksel;* ***Critical Review:*** *Erdem Yüksel;* ***References and Fundings:*** *Berire Şeyma Durmuş Ece, Zübeyir Yozgat, Mehmet Uğur Işık, Erdem Yüksel;* ***Materials:*** *Berire Şeyma Durmuş Ece, Zübeyir Yozgat, Mehmet Uğur Işık, Erdem Yüksel.*

REFERENCES

1. Lee CM, Afshari NA. The global state of cataract blindness. Curr Opin Ophthalmol. 2017;28(1):98-103. PMID: 27820750.
2. Evans JR, Fletcher AE, Wormald RP. Depression and anxiety in visually impaired older people. Ophthalmology. 2007;114(2):283-8. PMID: 17270678.
3. Hong T, Mitchell P, Burlutsky G, Samarawickrama C, Wang JJ. Visual impairment and the incidence of falls and fractures among older people: longitudinal findings from the Blue Mountains Eye Study. Invest Ophthalmol Vis Sci. 2014;55(11):7589-93. PMID: 25370514.
4. Fong CS, Mitchell P, Rochtchina E, Teber ET, Hong T, Wang JJ. Correction of visual impairment by cataract surgery and improved survival in older persons: the Blue Mountains Eye Study cohort. Ophthalmology. 2013;120(9):1720-7. PMID: 23664468.
5. Langelaan M, de Boer MR, van Nispen RM, Wouters B, Moll AC, van Rens GH. Impact of visual impairment on quality of life: a comparison with quality of life in the general population and with other chronic conditions. Ophthalmic Epidemiol. 2007;14(3):119-26. PMID: 17613846.
6. Singh G, Grzybowski A. Evolution of and developments in simultaneous bilateral cataract surgery. Update 2020. Ann Transl Med. 2020;8(22):1554. PMID: 33313299; PMCID: PMC7729368.
7. Ahmed IIK, Hill WE, Arshinoff SA. Bilateral same-day cataract surgery: an idea whose time has come #COVID-19. Ophthalmology. 2021;128(1):13-4. PMID: 32888947; PMCID: PMC7462754.
8. Chan JO, De La Paz P. Bilateral cataract extraction in one sitting. J Philipp Med Assoc. 1952;28(12):700-5. PMID: 13011736.
9. Arshinoff SA, Strube YN, Yagev R. Simultaneous bilateral cataract surgery. J Cataract Refract Surg. 2003;29(7):1281-91. PMID: 12900233.
10. Henderson BA, Schneider J. Same-day cataract surgery should not be the standard of care for patients with bilateral visually significant cataract. Surv Ophthalmol. 2012;57(6):580-3. PMID: 22995968.
11. Lee E, Balasingam B, Mills EC, Zarei-Ghanavati M, Liu C. A survey exploring ophthalmologists' attitudes and beliefs in performing Immediately Sequential Bilateral Cataract Surgery in the United Kingdom. BMC Ophthalmol. 2020;20(1):210. PMID: 32487105; PMCID: PMC7265252.
12. Mills EC, Zarei-Ghanavati M, Liu CSC. Immediate sequential bilateral cataract surgery: The rationale, implementation, and beliefs of ophthalmic surgeons across Europe. J Cataract Refract Surg. 2019;45(12):1725-31. PMID: 31856982.
13. Rush SW, Guerrero Criado AE, Kezirian GM, Durrie D. Immediate sequential bilateral cataract surgery: opinions among refractive surgeons in the United States and a comparative analysis with European Consultants. J Ophthalmol. 2022;2022:8310921. PMID: 36105792; PMCID: PMC9467787.
14. Spekreijse LS, Veldhuizen CA, Henry YP, van den Biggelaar FJHM, Dirksen CD, Nuijts RMMA. Ophthalmologists' attitudes toward immediate sequential bilateral cataract surgery: dutch national survey. J Cataract Refract Surg. 2022;48(9):1044-9. PMID: 35239579; PMCID: PMC9415210.
15. Amsden LB, Shorstein NH, Fevrier H, Liu L, Carolan J, Herrinton LJ. Immediate sequential bilateral cataract surgery: surgeon preferences and concerns. Can J Ophthalmol. 2018;53(4):337-41. PMID: 30119786.
16. Eibenberger K, Stifter E, Pusch F, Schmidt-Erfurth U. Simultaneous bilateral pediatric and juvenile cataract surgery under general anesthesia: outcomes and safety. Am J Ophthalmol. 2020;214:63-71. PMID: 31945328.
17. Lee JH, Jung HK, Lee GG, Kim HY, Park SG, Woo SC. Effect of behavioral intervention using smartphone application for preoperative anxiety in pediatric patients. Korean J Anesthesiol. 2013;65(6):508-18. PMID: 24427456; PMCID: PMC3888843.
18. Griffiths UK, Bozzani FM, Gheorghe A, Mwenge L, Gilbert C. Cost-effectiveness of eye care services in Zambia. Cost Eff Resour Alloc. 2014;12(1):6. PMID: 24568593; PMCID: PMC3944959.
19. Arshinoff SA. Same-day cataract surgery should be the standard of care for patients with bilateral visually significant cataract. Surv Ophthalmol. 2012;57(6):574-9. PMID: 22995967.
20. Kang KD, Abdul Majid AS, Kwag JH, Kim YD, Yim HB. A prospective audit on the validity of written informed consent prior to glaucoma surgery: an Asian perspective. Graefes Arch Clin Exp Ophthalmol. 2010;248(5):687-701. PMID: 19830443.
21. Arshinoff SA, Bastianelli PA. Incidence of postoperative endophthalmitis after immediate sequential bilateral cataract surgery. J Cataract Refract Surg. 2011;37(12):2105-14. PMID: 22108106.
22. Singh R, Dohlman TH, Sun G. Immediately sequential bilateral cataract surgery: advantages and disadvantages. Curr Opin Ophthalmol. 2017;28(1):81-6. PMID: 27684294.