



**PRELIMINARY REPORT OF THE
NATIONAL CATARACT SURGERY
REGISTRY
JANUARY TO MARCH 2002**

**Edited by
Goh Pik Pin
Hamidah Budin
Ong Poh Yan
Shamala Retnasabapathy**

A publication of the
National Cataract Surgery Registry
And
Clinical Research Centre, Ministry of Health

Published by the
National Cataract Surgery Registry (NCSR)
C/O Cataract Surgery Registry Unit
Clinical Research Centre (CRC)
Level 3 Dermatology Block
Jalan Pahang
50586 Kuala Lumpur

Direct Line: 603-40455652
General Line: 603-40455408 Ext: 15/25
Fax: 603-40451252
Email ncsr@crc.gov.my
Website: <http://www.crc.gov.my/ncsr>

Disclaimer

The data reported here have been supplied by NCSR. The interpretation and reporting of these data are the responsibility of the Editor and in no way should be seen as an official policy or interpretation of the NCSR.

Suggested citation

The suggested citation for this report is as follows:
PRELIMINARY REPORT OF THE NATIONAL CATARACT SURGERY
REGISTRY JANUARY TO MARCH 2002
Editor: Goh Pik Pin, Hamidah Budin, Ong Poh Yan, Shamala Retnasabapathy
Kuala Lumpur, Malaysia 2003

Electronic version

Electronic version of this report can be downloaded at
<http://www.crc.gov.my/ncsr/preliminaryreport2003>

Staff of the NCSR

Cataract Surgery Registry Unit CRC

Ms. Lee Poe Poay
Ms. Premalatha A/P Ragovan

National Disease and Treatment Registry Unit CRC

Dr. Rugayah Bakri

Biometrics Unit CRC

Ms. Celine Tsai, Information Security Officer
Mr. Kevin Ng Hong Heng, Network Administrator
Mr. Adlan Abdul Rahman, Assistant Network Administrator
Ms. Lim Jie Ying, Database Administrator
Mr. Patrick Lum, Webmaster
Mr. Sebastian Thoo, Programmer
Mr. Liang Hung Shan, Statistician

ACKNOWLEDGMENTS

The National Cataract Surgery Registry Committee would like to thank all who have contributed and worked hard to get this report on Preliminary Report of the National Cataract Surgery Registry January to March 2002, ready by January 2003.

We would like to especially thank the following:

All centres coordinators, and staff of Ophthalmology Departments from the various government hospitals, Universiti Sains Malaysia and Kem Terendak Military Hospital without whose dedication, hard work and timely data collection and submission, this report would not be possible.

Ms. Lee Poe Poay for her tireless and meticulous effort as data manager.

Mr. Liang Hung Shan for data analysis and tabulation of results.

Ms. Premalatha A/P Ragovan who helps in data entry.

The Clinical Research Centre for its technical support, especially Dr. Lim Teck Onn whose tireless effort and guidance has made this report a realization, and Dr. Rugayah Bakri and Dr Ding Lay Ming for their continuous support in managing the Cataract Surgery Registry Unit.

The Ministry of Health, Malaysia for the Major Research Grant to set up the registry.

And of course not forgetting other financial sponsors:

Alcon Laboratories (M) Sdn Bhd

Allergan

Pharmacia Ophthalmology Malaysia Sdn Bhd.

Thank you very much.

NATIONAL CATARACT SURGERY REGISTRY ADVISORY COMMITTEE

NATIONAL CATARACT SURGERY REGISTRY ADVISORY COMMITTEE

Dr. Mariam Ismail	Chairperson Head, Ophthalmology Service, MOH and Head, Ophthalmology Department Hospital Selayang
Dr. Goh Pik Pin	Co-Chairperson Ophthalmologist Ophthalmology Department Hospital Selayang
	Members
Datuk Dr. Abdul Gani B. Mohammed Din	Director Medical Development Division Ministry of Health
Dr. Gomathy Arumugam	President Ophthalmology Society Malaysian Medical Association
Dato' Dr. P. Balaravi	Head Ophthalmology Department Ipoh Hospital
Dr. Bethel Livingstone	Head Ophthalmology Department Seremban Hospital
Dr. Joseph Alagaratnam	Head Ophthalmology Department Kuala Lumpur Hospital
Dr. Zuraidah Bt. Mustari	Head Ophthalmology Department Kuala Terengganu Hospital
Dr. Hamidah Bt. Budin	Ophthalmologist Ophthalmology Department Hospital Kuala Lumpur
Associate Prof. Dr. Muhaya Bt. Mohamad	Head Ophthalmology Department Universiti Kebangsaan Malaysia
Dr. Elias Hussein	Head Ophthalmology Department Universiti Sains Malaysia
Dr. Hoh Hong Beng	Pantai Medical Centre, Kuala Lumpur
Dato Dr. Y. C. Lee	Lee Eye Centre, Ipoh, Perak
Dr. Lim Teck Onn	Head Clinical Research Centre Kuala Lumpur Hospital
Dr. Rugayah Bakri	Head Evidence Based Medicine Clinical Research Centre Kuala Lumpur Hospital

S/N Lee Poe Poay

Secretariat to NCSR Advisory Committee

LIST OF PARTICIPATING CENTRES

- 1 **94 Hospital Angkatan Tentera Kem Terendak**
Head, Ophthalmology Department: Lt Kol (Dr) Nor Aishah Bt Malik
Site Coordinator: S. Sjn Fauziah Bt Yusof
- 2 **Alor Setar Hospital**
Head, Ophthalmology Department: Dr. Ahmad Mat Saad
Site Coordinator: T/AN Siti Aishah Salim
- 3 **Duchess of Kent Sandakan Hospital**
Head, Ophthalmology Department: Dr. Adarsh Bhardwaj
Site Coordinator: MA Pius Kondu
- 4 **Ipoh Hospital**
Head, Ophthalmology Department: Dato Dr. P. Balaravi
Site Coordinator: Dr. Indarjit Singh
MA Hj. Ismail
- 5 **Kangar Hospital**
Head, Ophthalmology Department: Dr. Mohd Nazri Sulaiman
Site Coordinator: MA Abdul Rahman Daud
- 6 **Kuala Lumpur Hospital**
Head, Ophthalmology Department: Dr. Joseph Alagaratnam
Site Coordinator: S/N Hazizah Mohamed
S/N Rosmah
- 7 **Kuala Terengganu Hospital**
Head, Ophthalmology Department: Dr. Zuraidah Mustari
Site Coordinator: S/N Juriffah Mohd Amin
- 8 **Hospital Umum Sarawak Kuching**
Head, Ophthalmology Department: Dr. Intan Gudom
Site Coordinator: S/N Hjh Fatimah Hassan
- 9 **Melaka Hospital**
Head, Ophthalmology Department: Dr. S. Anusiah
Site Coordinator: S/N Soon Bee Wan
Dr. Meena Kandiah
- 10 **Miri Hospital**
Head, Ophthalmology Department: Dr. Daw Saw Thein
Site Coordinator: MA Musa Zaini
- 11 **Muar Hospital**
Head, Ophthalmology Department: Dr. Adnan Abas
Site Coordinator: MA Nuruhadi

- 12 **Pulau Pinang Hospital**
Head, Ophthalmology Department: Dr. Elizabeth John
Site Coordinator: En. Azahari B. Ahmad
MA Samsuddin Shahul Hamid
- 13 **Queen Elizabeth Kota Kinabalu Hospital**
Head, Ophthalmology Department: Dr. Dayang Sayalam Ag. Daud
Site Coordinator: S/N Eugenie
- 14 **Seremban Hospital**
Head, Ophthalmology Department: Dr. Bethel Livingstone
Site Coordinator: MA Thivagaran
- 15 **Sibu Hospital**
Head, Ophthalmology Department: Dr. Reddy
Site Coordinator: MA Morni B. Morsen
- 16 **Sultanah Aminah Johor Bahru Hospital**
Head, Ophthalmology Department: Dr. Loh Swee Seng
Site Coordinator: Dr. Suresh
S/N Hapsah Bt Ali
- 17 **Sungai Petani Hospital**
Head, Ophthalmology Department: Dr. Foo Sui Wan
Site Coordinator: S/N Zainab
- 18 **Taiping Hospital**
Head, Ophthalmology Department: Dr. Wong Sook Mun
Site Coordinator: S/N Norashah Bt Abd. Hamid
- 19 **Tawau Hospital**
Head, Ophthalmology Department: Dr. Ajit Majumder
Site Coordinator: MA Bacho Bin Nordin
- 20 **Teluk Intan Hospital**
Head, Ophthalmology Department: Dr. Vivian Gong Hee Meng
Site Coordinator: MA Halim
- 21 **Tengku Ampuan Afzan Kuantan Hospital**
Head, Ophthalmology Department: Dr. Vasantha Kumar
Site Coordinator: MA Nadarajah
S/N Rosila
- 22 **Tengku Ampuan Rahimah Klang Hospital**
Head, Ophthalmology Department: Dr. Yogan Kanagasabai
Site Coordinator: S/N Wong Huey Fen
- 23 **Universiti Sains Malaysia Hospital**
Head, Ophthalmology Department: Dr. Elias Hussein
Site Coordinator: Dr. Zabri Kamarudin
Dr. Rosnita

CONTENTS

ACKNOWLEDGMENTS	I
NATIONAL CATARACT SURGERY REGISTRY ADVISORY COMMITTEE.....	II
LIST OF PARTICIPATING CENTRES	II
INTRODUCTION	1
METHOD	2
1. OBJECTIVES	2
2. COVERAGE.....	2
3. DISEASE REGISTRATION METHODS.....	2
4. STATISTICAL ANALYSIS	3
ABBREVIATIONS	4
GLOSSARY	4
REPORT SUMMARY.....	5
1 PATIENTS' CHARACTERISTICS.....	5
2 CATARACT SURGERY PRACTICE.....	6
3 CATARACT SURGERY OUTCOMES	7
3.1 Cataract Surgery Complications- Intra-Operative	7
3.2 Cataract Surgery Complications - Post-Operative.....	8
3.3 Analysis On Cataract Surgery Visual Outcome.....	8
3.4 Post-operative Visual Acuity	9
3.5 Post-Op Refracted VA Improved By One Or More Line Of Snellen Chart....	11
3.6 Factors Contributing To Post-Op Refracted Visual Acuity Worse Than 6/12	11

LIST OF TABLES

Table 1.1: Age distributions.....	12
Table 1.2: Gender distributions.....	14
Table 1.3: Number (%) of surgery done by month.....	14
Table 1.4: Number of surgery done by centre	15
Table 1.5: Distribution of care setting by centre.....	17
Table 1.6: Number of patients with first eye and second eye surgery	18
Table 1.7: Number of patients with ocular co-morbidity	19
Table 1.8: Number of patients with systemic co-morbidity	20
Table 1.9: Pre-operative visual acuity measurement	21
Table 1.10: Causes of cataract	22
Table 2.1: Distribution of types of cataract surgery by centre.....	23
Table 2.2: Distribution of combined surgery by centre	25
Table 2.3: Proportion of nature of cataract surgery	26
Table 2.4: Type of anaesthesia.....	28
Table 2.5: Type of local anaesthesia.....	30
Table 2.6: Distribution of single and multiple local anaesthesia	32
Table 2.7: Type of sedation given to patient who had local anaesthesia	33
Table 2.8: Distribution of IOL placement.....	34
Table 2.9: Distribution of cataract surgery without IOL	35
Table 2.10: Distribution of IOL- materials and types.....	36
Table 3.1.1: Distribution of intra-operative complications by type of cataract surgery	37
Table 3.1.2: Distribution of intra-operative complications by combined surgery	41
Table 3.1.3: Distribution of intra-operative complications by nature of cataract surgery.....	43
Table 3.1.4: Distribution of intra-operative complications by type of anaesthesia	44
Table 3.1.5: Distribution of intra-operative complications by type of local anaesthesia	45
Table 3.1.6: Distribution of intra-operative complications by single or multiple local anaesthesia	47
Table 3.1.7: Distribution of intra-operative complications by type of sedation	48
Table 3.1.8: Distribution of intra-operative complications by sedation	50
Table 3.1.9: Distribution of intra-operative complications by cataract surgery with IOL.....	52
Table 3.2.1: Distribution of post-operative complications	56
Table 3.3.1: Median follow-up period in weeks (Patients with only unaided vision, refraction was not performed).....	57
Table 3.3.2: Median follow-up period in weeks (Patients with refracted vision).....	57
Table 3.4.1: Distribution of post-operative VA	58
Table 3.4.2: Distribution of post-operative refracted VA 6/12 or better at the last follow up, by surgery	61
Table 3.4.3: Distribution of post-operative refracted VA 6/12 or better in relation to age and type of surgery	63
Table 3.4.4: Distribution of post-operative refracted VA 6/12 or better in relation to gender and type of surgery.....	65
Table 3.4.5: Distribution of post-operative refracted VA 6/12 or better in relation to co-morbidity and type of surgery.....	66
Table 3.4.6: Distribution of post-operative refracted VA 6/12 or better in relation to complication and type of surgery.....	67

Table 3.4.7: Distribution of post-operative refracted VA 6/12 or better in relation to nature of surgery and type of surgery	68
Table 3.4.8: Distribution of post-operative refracted VA 6/12 or better in relation to anaesthesia and type of surgery	69
Table 3.4.9: Distribution of post-operative refracted VA 6/12 or better in relation to combined surgery and type of surgery	71
Table 3.4.10: Distribution of post-operative refracted VA 6/12 or better in relation to IOL and type of surgery	72
Table 3.5.1: Distribution of post-operative refracted VA improved by one or more line of Snellen chart, at the last follow up	72
Table 3.5.2: Distribution of post-operative refracted VA improved by one or more line of Snellen chart, with and without ocular co-morbidity at the last follow up	73
Table 3.5.3: Distribution of post-operative refracted VA improved by one or more line of Snellen chart with intra-op complication and without intra-op complication, at the last follow up	74
Table 3.5.4: Distribution of post-operative refracted VA improved by one or more line of Snellen chart with systemic co-morbidity and without systemic co-morbidity, at the last follow up	75
Table 3.6.1: Distribution of factors contributing to post-operative refracted VA of worse than 6/12	76

LIST OF FIGURES

Figure 1.1: Age distributions	13
Figure 1.3: Number (%) of surgery.....	14
Figure 1.4: Number of surgery done by centre	16
Figure 1.5: Distribution of day care and in patient by centre	18
Figure 1.9: Pre-operative visual acuity measurement.....	22
Figure 2.1: Distribution of types of cataract surgery by centre	24
Figure 2.4: Type of anaesthesia	29
Figure 3.1.1.1: Distribution of intra-operative complication.....	38
Figure 3.1.1.2: Distribution of intra-operative complication by posterior capsule rupture with vitreous loss and posterior capsule rupture without vitreous loss...	39
Figure 3.1.1.3: Distribution of intra-operative complication by zonular dialysis with vitreous loss and zonular dialysis without vitreous loss	40
Figure 3.1.3: Distribution of intra-operative complications by nature of cataract surgery.....	43
Figure 3.1.04: Distribution of intra-operative complications by type of anaesthesia..	44
Figure 3.1.6: Distribution of intra-operative complications by single or multiple local anaesthesia	47
Figure 3.1.7: Distribution of intra-operative complications by type of sedation.....	49
Figure 3.1.8: Distribution of intra-operative complications by sedation	51
Figure 3.1.9: Distribution of intra-operative complications by cataract surgery with IOL.....	53
Figure 3.1.10: Distribution of intra-operative complications by cataract surgery without IOL.....	55
Figure 3.4.1.1: Distribution of post-operative VA.....	59
Figure 3.4.1.2: Cumulative distribution of visual acuity by pre- and post- operative unaided VA	60
Figure 3.4.1.3: Cumulative distribution of visual acuity by pre- and post- operative refracted VA.....	60
Figure 3.4.2: Percent of patients with refracted VA 6/12 or better at the last follow up, by surgery.....	62

INTRODUCTION

Estimates of the National Eye Survey in 1996 reveals that cataract is a significant cause of visual impairment in Malaysia, accounting for 39% and 36% of the causes of blindness and low vision respectively. There is a huge backlog of patients requiring cataract surgery. However information on cataract surgical services with regards to patient demography, quality of service and surgical outcomes is limited in this country. These information are essential for the planning, implementation and evaluation of cataract surgery services.

Cataract surgery registry refers to the ongoing systematic collection, analysis and interpretation of data related to cataract surgery. The National Cataract Surgery Registry (NCSR) was established on the 1st of January 2002. The registry is sponsored by both the Ophthalmology Service and the Clinical Research Centre of the Ministry of Health (MOH). Till date twenty-three hospitals have participated as source data producers (SDP) to the NCSR. They are the departments of Ophthalmology of the MOH hospitals (21 centres), Universiti Sains Malaysia and Kem Terendak of the Ministry of Defence. The Advisory Committee oversees the operations of the NCSR.

This report is a preliminary analysis of data collected on 3016 patients who underwent cataract surgery from January to March 2002, received from 22 source data producers. All patients whose complete records were received by the Cataract Surgery Registry Unit (CSRU) by June 2002 were included in the analysis. Data from one SDP were not analysed due to incomplete return.

On behalf of the CSRU, I would like to thank all the 23 hospitals that have participated in the NCSR since January 2002. We hope that we will continue to get the full support from all government and university hospitals and in the future the participation of private eye care providers. It is through this cooperation that we can obtain a true reflection of cataract surgery performed in Malaysia.

Dr. Mariam Ismail

Chairman

NCSR Advisory Committee

METHOD

1. OBJECTIVES

The objectives of the National Cataract Surgery Registry are to:

- Determine the frequency and distribution of cataract surgery in Malaysia.
- Determine the outcomes, and factors influencing outcomes of cataract surgery.
- Evaluate cataract surgery services.
- Stimulate and facilitate research on cataract and its management.

2. COVERAGE

There are 29 Ophthalmology departments under Ministry of Health (MOH), one under Ministry of Defence and 3 Ophthalmology departments in the local universities. Of these public operated ophthalmology departments, 23 registered as source data producers from January 2002. This gave a coverage rate of 70% in the initial phase. If only the MOH hospitals were taken into account, the coverage rate was 72%.

3. DISEASE REGISTRATION METHODS

The organizational structure of NCSR consists of sponsors, advisory committee, cataract surgery registry unit (CSRU), and source data producers and target groups/users. The Ophthalmology Service and the Clinical Research Centre, both of the MOH, jointly sponsor the registry. The NCSR is governed by an advisory committee who oversees the operations of registry. The cataract surgery registry unit is based at the Clinical Research Centre, MOH, where collected data are analysed and reports generated. The source data producers are Departments of Ophthalmology, both public and private, where cataract surgeries are performed. The users or target groups are individuals or institutions to which the regular registry reports are addressed.

The data standards are established based on the usefulness for cataract surgery registry, ease of data collection and compatibility with other data set (e.g. ICD-10 coding).

Three types of case record forms (CRF) are employed in data collection. The pre-clerking forms gather information on patient demography, aetiology of cataract, pre-operative visual acuity, pre-existing ocular and systemic co-morbidities, first and second eye operation. The operative record forms capture data related to surgical procedure, such as type of cataract surgery, day care or non day care surgery, elective or emergency surgery, type of sedation, type of intraocular lens used, and intra-operative complications. The cataract outcome forms collect data on post-operative complications, post-operative best corrected visual acuity by 12 weeks and possible factors for poor visual outcome of worse than 6/12. The CRFs are used as part of the clinical records. Regardless of age, all patients who undergo cataract or combined cataract surgery are included in the registry. The completed forms are sent to CSRU where data are analysed, interpreted and presented in regular report to be disseminated to the users. Participation of source data producers is entirely voluntary.

The data transferred to CSRU are kept strictly confidential with access only to authorized individual working in the CSRU. Till June 2002, 23 centres have participated in the registry. They are from MOH Ophthalmology departments (21 centres), military hospital (1 centre) and teaching hospital (1 centre).

4. STATISTICAL ANALYSIS

This preliminary report is a descriptive analysis. All data were described in terms of percentages except continuous data, like follow-up period where summary statistics like median, 25th percentile and 75th percentile were calculated, and for age, where median (50th percentile), mean, minimum and maximum value were calculated.

We did not compare cataract surgery outcomes i.e. intra-operative and postoperative complications, and visual outcomes by centres or surgeon status. We also ignored the missing data and confined the analysis to available data. Therefore, no imputation was done.

ABBREVIATIONS

CF	Counting finger
CMO	Cystoid macular oedema
CSRU	Cataract surgery registry unit
ECCE	Extracapsular cataract extraction
HM	Hand movement
IOL	Intraocular lens
ICCE	Intracapsular cataract extraction
INTRA-OP	Intra-operative
LA	Lens aspiration
NPL	No perception of light
PCO	Posterior capsule opacification
PCR	Posterior capsule rapture
PE	Phacoemulsification
PL	Perception of light
POST-OP	Post-operative
2 IOL Imp	Secondary IOL implantation
SDP	Source data producers
VA	Visual acuity
ZD	Zonular dialysis

GLOSSARY

Advisory Committee	A committee, board, council, panel or group thereof that is established by the sponsors of the registry to govern the registry. The Advisory Committee shall direct and control the activities of the designated collaborating unit, which manages the day-to-day operations of the registry.
Advisory Committee member	An individual appointed to serve on an advisory committee. Members may have relevant expertise and/or represent the interest of SDP, users or donor.
Chairperson	An advisory committee member who is appointed to preside at committee meetings and ensure that all rules of order and conduct are maintained during each session.
Disease Register	The ongoing systematic collection, analysis and interpretation of a specific disease data essential to the planning, implementation and evaluation of clinical and public health practice, closely integrated with dissemination of these data to those who need to know. The final link in the chain is the application of these data to the management, prevention and control of the disease. A registration system includes a functional capacity for data collection, analysis and dissemination linked to clinical and public health programs.
Secretary	The individual responsible for an advisory committee's overall administrative management. He/she is ordinarily a staff provided by the designated collaborating unit for the purpose.
Source data producer	The individuals or institutions that report the required data to the registry.
Sponsor	The individuals or institutions that own the registry.

REPORT SUMMARY

This preliminary report contains results from 3016 patients from 22 SDPs who had cataract surgery performed from January to March, 2002, and whose complete set of case record forms were received by the Cataract Surgery Registry Unit by June, 2002. The number thus did not reflect the true burden of cataract surgery in each centre. Data from one SDP were not analysed due to incomplete return.

1 PATIENTS' CHARACTERISTICS

- 1.1 The mean age of the 3016 patients was 64 years (youngest 4 months, eldest 97 years old). More than half of the patients (56%) was 65 years and older.
- 1.2 Gender distribution was equal among the male and female patients.
- 1.3 Thirty five percent of cataract surgery was performed in January (1049), 27% in February (815) and 38% in March (1152).
- 1.4 Centre E had the most number of cataract operation (n=321, 11%) followed by centre B, H, K, O (all have 8%) and centre U (7%).
- 1.5 One third (35%) of the operation were done as day care surgery and two third (65%) were done as in-patient. Centre E had most of the operation done as day care (89%). Seven centres have no day care service.
- 1.6 Two third of the patients (70%) had first eye operation while one third of the patient (30%) had second eye operation (i.e. fellow eye has had cataract surgery before).
- 1.7 Ocular co-morbidity was noted in 28% of the patients. The most common anterior segment ocular co-morbidity was glaucoma, and for posterior segment was diabetic retinopathy. Five percent of the patients had poor view of the posterior segment and thus the posterior segment could not be assessed.
- 1.8 Systemic co-morbidity was noted in 55% of the patients. Hypertension was the most common systemic co-morbidity (33%) followed by diabetes mellitus (28%), ischaemic heart disease (9%) and asthma/ COAD (6%).
- 1.9 Most patients presented with unaided vision of hand movement and refracted vision of 6/12. Sixty six percent of the patients presented with blindness in the eyes to be operated (blindness is defined as presenting vision of 3/60 or worse) but when refracted vision was recorded, only 30% of the eyes was in the blindness category.
- 1.10 Senile/age related cataract accounted for 93% and traumatic cataract accounted for 3% of the causes of cataract.

2 CATARACT SURGERY PRACTICE

- 2.1 Extracapsular cataract extraction (ECCE) was the most common type of cataract surgery performed. Fifty six percent of cataract surgeries were ECCE, 38% were phacoemulsification (PE), 3% PE convert to ECCE, and 3% lens aspiration. Centres E, G, H, L and T performed 50% or more PE. The rest of the centres performed ECCE more frequently than other type of surgeries. Three centres i.e. I, N and R performed purely ECCE with no other type of cataract surgery.
- 2.2 Only 4% of the cataract surgery had some form of combined surgery. Centre C performed the highest number of combined surgery at 10%. Centre I was the only centre that did not perform any combined surgery.
- 2.3 Almost all cataract surgeries were performed for elective reasons with only 1% of the cases requiring emergency cataract surgery. Emergency cataract surgery was performed at the range of 1% to 5% at all sites.
- 2.4 Ninety four percent of cataract surgeries were performed under local anaesthesia (LA). The frequency of LA utilisation ranged between 86-100% at the various centres. Six percent of all cataract surgeries were performed under general anaesthesia (GA). Centres F, N, T, U and V utilised GA more frequently than other sites and this varied between 10-14%.
- 2.5 For cataract surgeries performed under LA, the type of LA most commonly performed was the subtenon anaesthesia (48%). This was followed by retrobulbar anaesthesia (30%), peribulbar anaesthesia (19%) and topical anaesthesia (7%).

Generally more than one type of LA was utilised at each centre. Though there was usually a preference towards one type of LA at each centre. Six centres (A, C, I, J, N, R) however, performed purely one type of anaesthesia. Centre C and N performed only retrobulbar, centre A and J only subtenon, and centre R and I only peribulbar local anaesthesia.

Facial block was given to prevent over action of the orbicularis oculi and not for pain relieve during surgery. This was performed at only 8 of the 22 centres and centre C and R performed it on all cataract surgeries.

- 2.6 Cataract surgery in some cases may require more than one type of LA to provide adequate anaesthesia. Of the 94% cataract surgeries requiring LA, 84% needed only one type of LA with the remaining 16% requiring more than one type of LA. There were 11 centres that did not utilise multiple LA. This was in contrast to centre C and R where more than 90% of the patients were given more than one type of LA.
- 2.7 More than half (55%) of cataract surgeries undergoing LA did not have any form of sedation. Centre A, H, S, and Q did not use any form of sedation.

Among the 45% of patients who were given sedation, oral sedation was the commonest sedation used (37%). Intravenous, intravenous plus oral and intramuscular were infrequently used and ranged between 2 to 4%.

- 2.8 Posterior chamber (PC) intraocular lens (IOL) was the normal placement of an IOL in uncomplicated surgeries. PC IOLs were placed in 97% of the cataract surgeries. Three centres (C, I, and Q) achieved 100% PC IOL placement.

Anterior chamber (AC) IOL were placed in 3% of cases and this ranged between 0-8% at the various centres except for centre A where 20% of cases required AC IOL placement.

- 2.9 Of the 84 cases of cataract surgery in which no IOL was implanted, 67% were planned to have no implantation. Thirty three percent had been planned for IOL but lens implantation was not possible at the time of surgery.
- 2.10 IOLs made of PMMA were the most frequently used IOL (79%). This was followed by IOLs made of silicone (12%) and acrylic (10%) material. Seventy-seven percents of the eyes had non-foldable IOLs and 23% had foldable IOL. However, 77 of PMMA IOL material were recorded as foldable type, probably by mistake. While 17 of silicone IOL and 18 of acrylic IOL were recorded as non-foldable type, probably they were implanted without folding.

3 CATARACT SURGERY OUTCOMES

3.1 Cataract Surgery Complications- Intra-Operative

- 3.1.1 Overall, 11% of cataract surgeries had intra-operative complications. Posterior capsule rupture with vitreous loss was the commonest, contributing to 5% of total number of cataract surgery performed, followed by zonular dialysis with vitreous loss (2%).

As for surgical techniques, PE converted to ECCE cases had the highest complication rate (53%), followed by ICCE (42%). The rates of complication in ECCE and PE were almost similar, being 10% and 9% respectively.

- 3.1.2 In cases of combined surgeries, 16% had intra-operative complication. Complication was seen highest in those combined with vitreo-retinal surgery (40%). Of all the intra-operative complication, posterior capsule rupture with vitreous loss was the commonest (5%).
- 3.1.3 Nineteen percents of emergency cases had intra-operative complications compared to 11% of elective cases.
- 3.1.4 Twelve percents of the patients who had general anaesthesia and 11% of those who had local anaesthesia had intra-operative complications.

- 3.1.5 For local anaesthesia, subtenon, peribulbar, retrobulbar and topical anaesthesia contributed 15%, 10%, 9% and 8% of intra-operative complications respectively.
- 3.1.6 The occurrence of intra-operative complications was similar whether single (12%) or multiple (10%) local anaesthesia was given to the patients.
- 3.1.7 Intravenous (14%), intravenous plus oral (14%) and intra-muscular sedation (14%) had higher percentage of intra-operative complication compared to those given oral sedation alone (12%), or no sedation was given (11%).
- It seems that patients who were not given sedation had lower intra-operative complications. It may be due to the fact that sedation was given following the occurrence of intra-operative complications.
- 3.1.8 Patients who were given multiple sedation had higher intra-operative complication (40%) compared to those who had no sedation (11%) and those who had single sedation (12%).
- 3.1.9 Patients who had ACIOL implanted had the highest rate of intra-operative complications (76%) as compared to those who had PCIOL (8%) and those who had scleral fixated IOL (0%). It is obvious that most patients who had ACIOL had intra-operative complications, particularly posterior capsular rupture, rendered implantation of PCIOL not possible. Among patients who had ACIOL, 63% of them had posterior capsule rupture(51% with vitreous loss, 12% without vitreous loss).
- 3.1.10 For those without IOL implantation, patients who were planned but did not have IOL implanted had higher percent of intra-operative complications (76%), compared to those who were not planed to have IOL implantation (20%). Understandably, the earlier group was those who had intra-operative complication rendered IOL implantation impossible. Posterior capsule rupture with vitreous loss was the commonest complication among patients who were planed but did not have IOL implanted (14%).

3.2 Cataract Surgery Complications - Post-Operative

- 3.2.1 Overall, 14% of patients had post-operative complication. Central corneal oedema within 4 mm of visual axis (4 %) and astigmatism of more than 3 dioptries (4 %) were the most common complications.

3.3 Analysis On Cataract Surgery Visual Outcome

- 3.3.1 For patients who did not come for post-operative refraction, their median post-operative follow-up period was shorter, at 8.1 weeks. Two third of them had follow up period of 12.1 weeks.
- 3.3.2 For patients who had post-operative refraction performed, their median post-operative follow-up period was 10.9 weeks. Two third of them had follow up period of 13.9 weeks.

3.4 Post-operative Visual Acuity

- 3.4.1 Thirty-eight percents of the patients obtained postoperative unaided VA of 6/12 or better. The proportion of patient with this VA increased to 79% when refracted vision was used as the measurement.

Four percents of the operated eyes had post-operative refracted VA (7% with unaided VA) at the blindness range (VA 3/60 and worse).

In general, post-operative VA was better than pre-operative VA and the difference was more apparent when unaided VA was taken as the measurement.

- 3.4.2 As a whole, excluding patients who had secondary IOL implant, patients who had PE performed had the highest percentage of post-operative refracted VA 6/12 or better (86%), followed by ECCE (76%), PE converted to ECCE (71%). Patients who had ICCE had the lowest percentage (38%).

Patients who had PE seemed to have better visual outcome compared to ECCE, more apparent when we take unaided vision as the outcome measurement. This may be partly due to exclusion bias as 75 patients who had PE were converted to ECCE when there were intra-operative complications.

- 3.4.3 When comparing age group and visual outcome for ECCE group, patients older than 85 years had the worst outcome while for PE group, patients younger than 35 years had the worst outcome.

- 3.4.4 In general, post-operative visual outcome was similar among male (81%) and female patients (78%).

- 3.4.5 As a whole, patients without ocular co-morbidity (84%) had higher percentage of post-operative refracted VA 6/12 or better as compared to those with ocular co-morbidity (66%).

Among patients who did not have ocular co-morbidity, PE (90%), followed by ECCE (81%), PE converted to ECCE (71%), ICCE (67%) and lens aspiration (67%) had post-operative refracted VA 6/12 or better.

In general, presence or absent of systemic co-morbidity did not affect post-operative visual outcome. But for patients who had PE converted to ECCE, percent of good visual outcome was much higher among those who did not have systemic co-morbidity (90% vs. 62%).

- 3.4.6 In general patients who had intra-operative or post-operative complications have poorer visual outcome.

Sixty- six percents of patients with intra-operative complications had post-operative refracted VA 6/12 or better compared to 81% for those without intra-operative complications.

Among patients with post-operative complications, 62% of them had post-operative refracted VA 6/12 or better compared to 82% without post-operative complications.

In the absence of intra-operative or post-operative complication, PE had better outcome (88% and 87% respectively), compared to other types of surgery. It was also observed that, in the absence of intra-operative complications, patients who had PE converted to ECCE (77%) had similar visual outcome of 6/12 or better, compared to those who had ECCE (78%).

3.4.7 In general, patients who had elective surgery have better visual outcome (79%) compared to emergency cataract surgery (59%), except those who had ICCE where patients who had emergency cataract operation had better visual outcome (50% vs. 36%). This might imply that when ICCE is indicated, especially among patients with lens related complications such as phacomorphic, phacolytic or lens subluxation, it may be better to perform ICCE earlier, as emergency operation.

3.4.8 Patients who had local anaesthesia had better visual outcome compared to those who had general anaesthesia (80% and 60% respectively). This may be because majority of patients who required general anaesthesia were in the younger age group, or those who had pre-existing systemic or ocular comorbidity.

Patients who had topical anaesthesia had the highest percentage with good visual outcome (86%). This may be due to the fact that most of them had PE performed.

Percentage of good visual outcome was similar among those who had retrobulbar, subtenon, and subconjunctival anaesthesia (80%). Those who had peribulbar had the lowest percent of good visual outcome (78%).

There is no difference in visual outcome among patients who were served and those who were not served oral sedation.

3.4.9 In general, patients who did not have combined surgeries had better visual outcome (80%) compared to those who had combined surgery (63%). However, the difference in visual outcome among those who had PE alone and PE combined with other surgeries were not much (84% vs. 80%).

3.4.10 Understandably, patients who had IOL implanted had higher percentage of post-operative refracted VA 6/12 or better (81%) compared to those who did not have IOL implanted (18%).

Eighty-seven percents of patients with foldable IOL had postoperative visual acuity of 6/12 or better, compared to 79% of those with non-foldable IOL.

In PE and lens aspiration cases, those with foldable IOL had a slightly better visual outcome (89% vs. 84% for PE, 67% vs. 55% for lens aspiration).

When comparing PMMA, silicone and acrylic lens materials in PE cases, there is not much difference in terms of visual outcome (84%, 89%, 89% of the patients achieved post-operative refracted VA 6/12 or better respectively).

3.5 Post-Op Refracted VA Improved By One Or More Line Of Snellen Chart

- 3.5.1 Out of 3016 patients, only 225 patients had refracted vision for both pre-operative and post-operative assessment. Among these 225 patients, 91% of them had one or more line of visual improvement postoperatively, while 5% experienced no change in visual acuity and 4% had reduced vision. Among those with one line visual improvement, the highest percentage was ECCE (93%), followed by PE (91%), lens aspiration (86%) and PE converted to ECCE (67%). PE converted to ECCE had the highest percent of post-operative worsening of vision of one or more line (22 %), followed by lens aspiration (14%).
- 3.5.2 In the absent of ocular co-morbidity, visual improvement of one or more line was higher in ECCE (97%) and PE (91%) cases compared to PE converted to ECCE cases (63%).
- 3.5.3 In the absent of intra-operative complications, ECCE (93%) and PE (91%) have similar percentage of one line or more visual improvement.
- 3.5.4 In the absent of systemic co-morbidity, ECCE (93%) and PE (91%) have similar percentage of one line or more visual improvement.

3.6 Factors Contributing To Post-Op Refracted Visual Acuity Worse Than 6/12

- 3.6.1 Five hundred and three patients had postoperative visual acuity worse than 6/12, but causative factors were identified only in 75% of the patients (n=380).

Pre-existing ocular co-morbidity (34%) was the main cause for poor visual outcome followed by high astigmatism (19%), posterior capsular opacification (11%), clinical cystoid macular oedema (4%), corneal decompensation (3%), endophthalmitis (1 %), retinal detachment (1 %) and decentered IOL (1 %).

If we assumed that all patients who had endophthalmitis had post-operative VA of worse than 6/12, the estimated rate of endophthalmitis in the 3016 patients was 0.001%.

PATIENTS' CHARACTERISTICS

Age Distribution

Gender Distribution

Number (%) of Surgeries Done by Month

Number Surgery by Centre

Distribution of Care Setting by Centre

Number of Patient With Ocular Co-Morbidity

Number of Patient with Systemic Co-Morbidity

Pre-Operative Visual Acuity Measurement

Causes of Cataract

1. PATIENTS' CHARACTERISTICS

Table 1.1: Age distributions

Age, years	N=3016
Mean	64.1
Median	66
Minimum	0.3 (4 months)
Maximum	97
% Distributions	
Age group	
<1 year	0
1-14 years	1
15-24 years	1
25-34 years	1
35-44 years	3
45-54 years	11
55-64 years	27
65-74 years	38
75-84 years	16
>=85 years	2

Figure 1.1: Age distributions

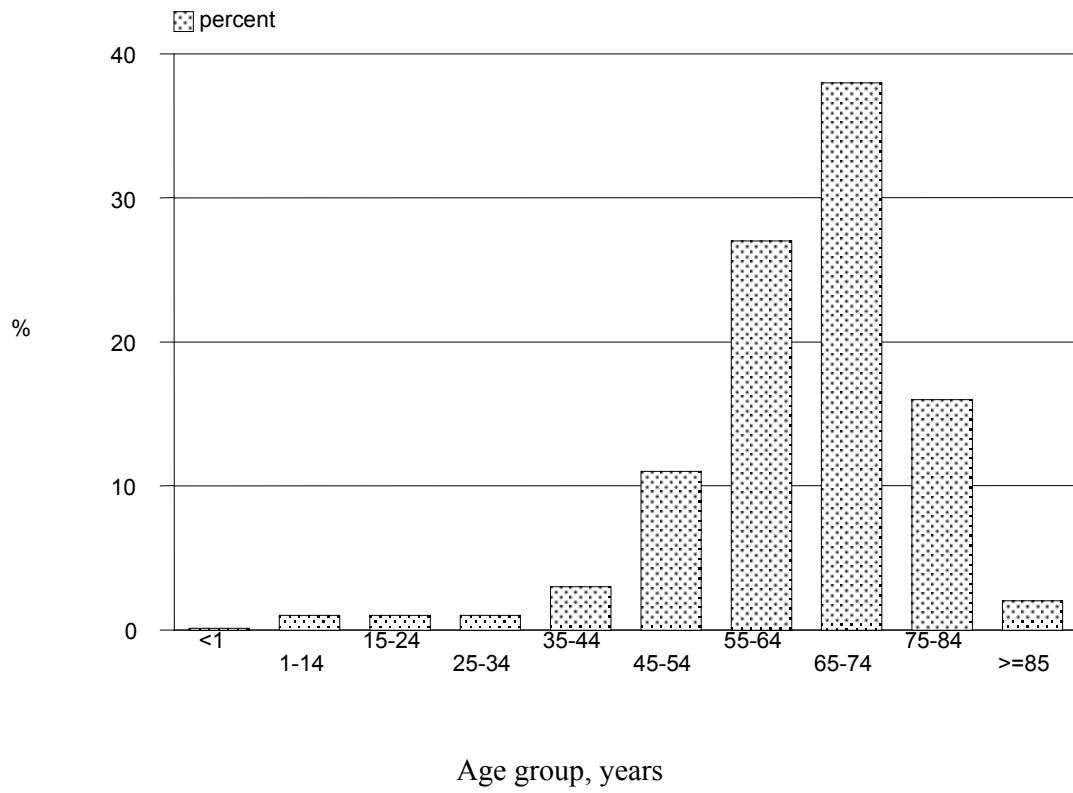


Table 1.2: Gender distributions

Gender	N=3016
	%
Male	50
Female	50

Table 1.3: Number (%) of surgery done by month

Month	No.	%
N	3016	100
January	1049	35
February	815	27
March	1152	38

Figure 1.3: Number (%) of surgery

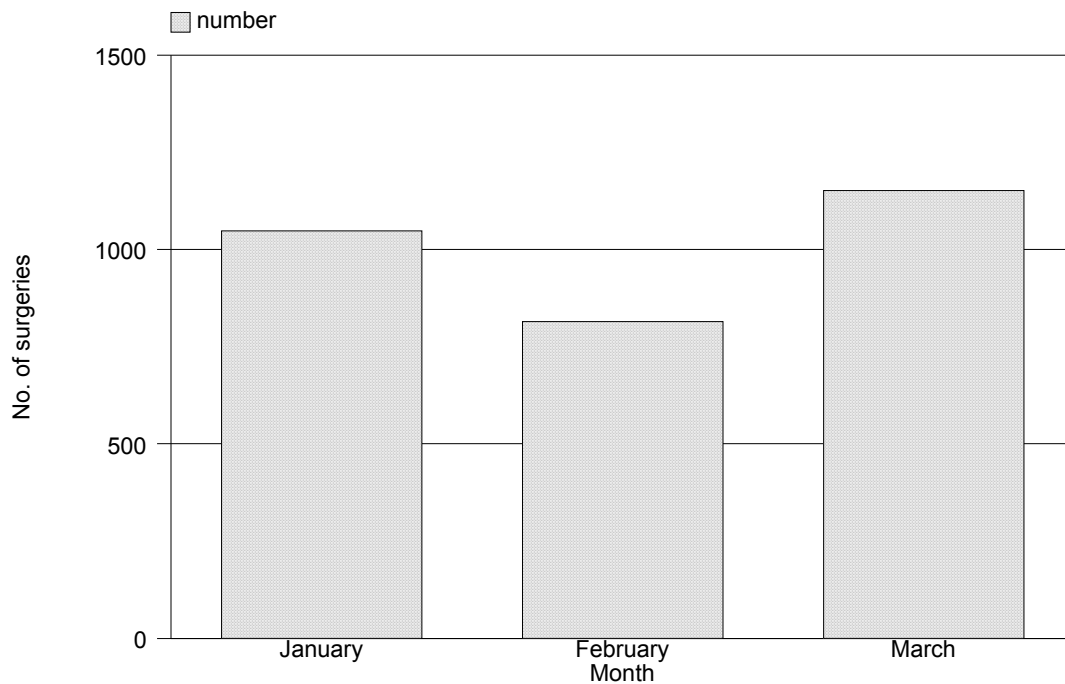


Table 1.4: Number of surgery done by centre

Centre	No.	%
All sites	3016	100
A	15	0.5
B	252	8
C	30	1
D	82	3
E	321	11
F	129	4
G	189	6
H	248	8
I	23	1
J	124	4
K	240	8
L	140	5
M	183	6
N	52	2
O	234	8
P	89	3
Q	105	3
R	33	1
S	111	4
T	139	5
U	207	7
V	70	2

Figure 1.4: Number of surgery done by centre

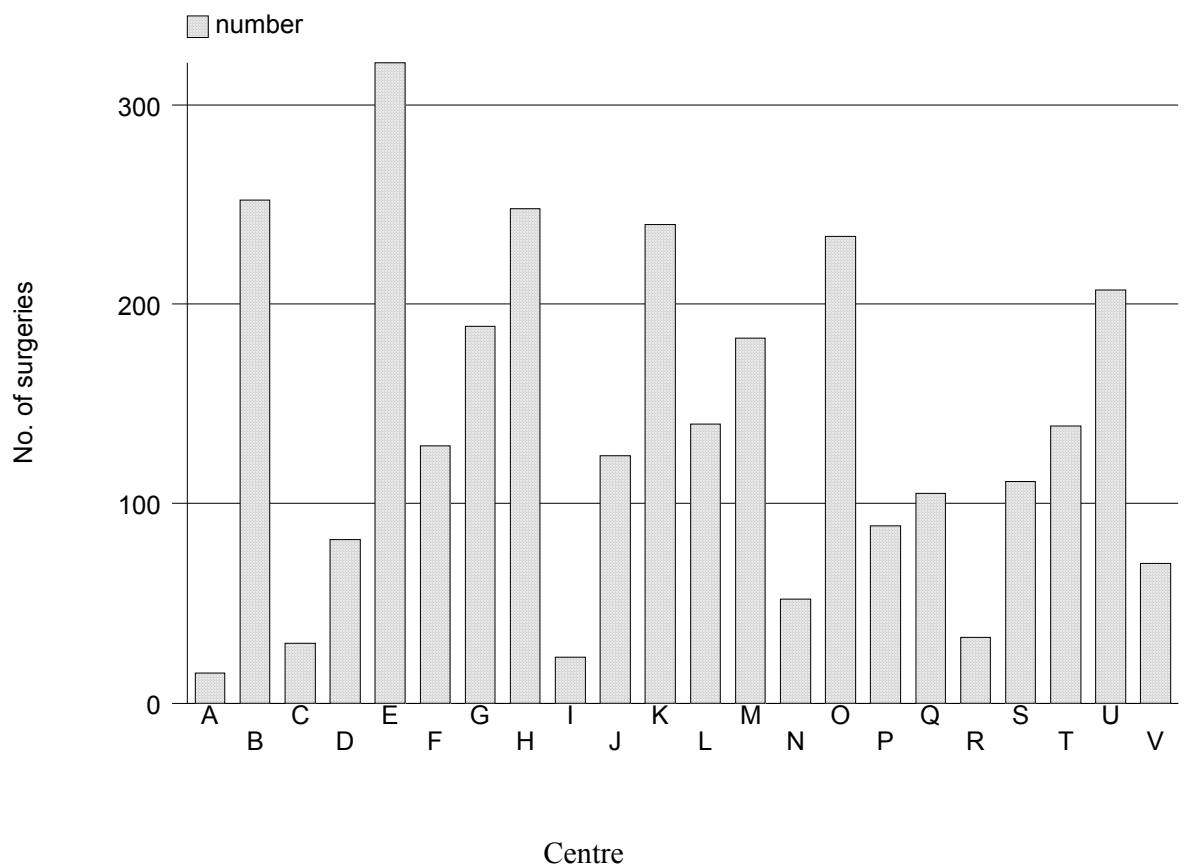


Table 1.5: Distribution of care setting by centre

Centre	Care setting		
	N	% Day care	% In-patient
All sites	3016	35	65
A	15	0	100
B	252	16	84
C	30	0	100
D	82	6	94
E	321	89	11
F	129	65	35
G	189	74	26
H	248	83	17
I	23	0	100
J	124	2	98
K	240	57	43
L	140	11	89
M	183	7	93
N	52	0	100
O	234	15	85
P	89	19	81
Q	105	6	94
R	33	0	100
S	111	16	84
T	139	38	62
U	207	0	100
V	70	0	100

Figure 1.5: Distribution of day care and in patient by centre

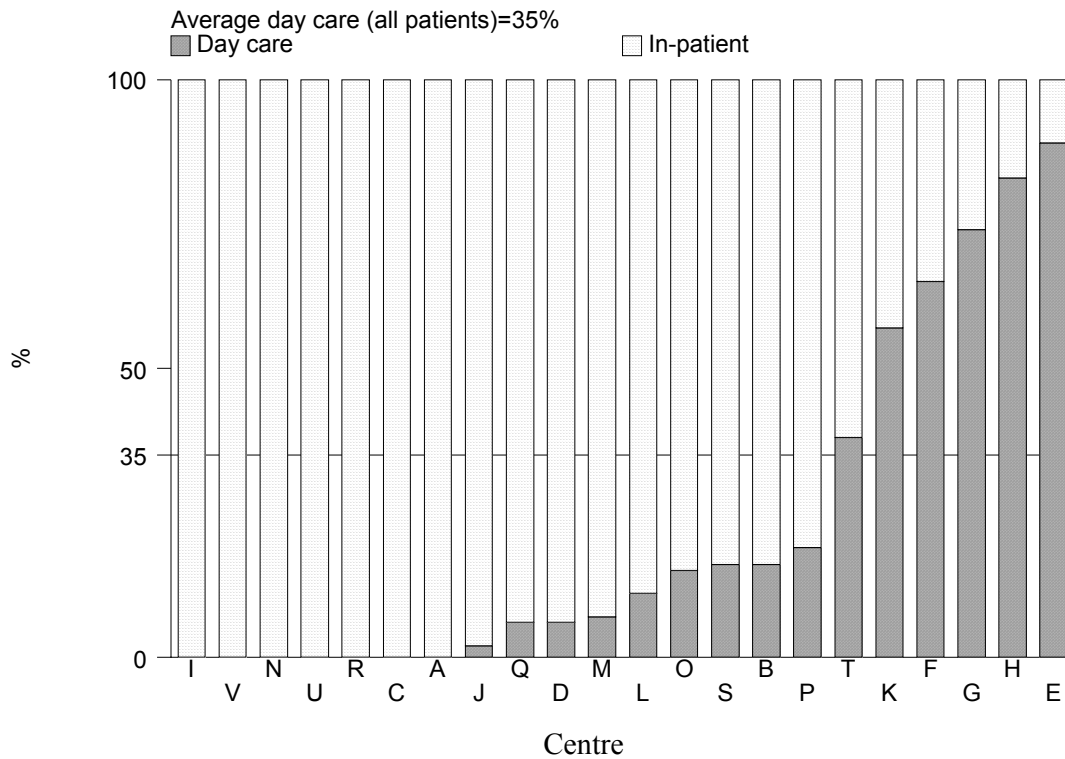


Table 1.6: Number of patients with first eye and second eye surgery

Type of surgery	No.	%
N	3016	100
First eye	2119	70
Second eye	897	30

Table 1.7: Number of patients with ocular co-morbidity

Patients with ocular co-morbidity	No.	%
N	3016	100
Patients with any ocular co-morbidity	847	28
Patients with specific ocular co-morbidity		
Anterior segment		
1.Pterygium involving the cornea	115	4
2.Corneal opacity	54	2
3.Glaucoma	188	6
4.Chronic uveitis	18	1
5.Pseudoexfoliation	38	1
Len related complications		
1.Phacomorphic	26	1
2.Phacolytic	13	0
3.Subluxated/Disclosed	23	1
Posterior segment		
1.Diabetic Retinopathy: Non Proliferative	152	5
2.Diabetic Retinopathy: Proliferative	42	1
3.Diabetic Retinopathy: CSME	20	1
4.Diabetic Retinopathy: Vitreous haemorrhage	20	1
5.ARM	35	1
6.Other macular disease (includes hole or scar)	17	1
7.Optic nerve disease, any type	9	0
8.Retinal detachment	18	1
9.Cannot assessed	146	5
Miscellaneous		
1.Amblyopia	13	0
2.Significant previous eye trauma	18	1
3.Pre-existing non glaucoma field defect	0	0
Other	84	3

Table 1.8: Number of patients with systemic co-morbidity

Patients with systemic co-morbidity	No.	%
N	3016	100
Patients with any systemic co-morbidity	1644	55
Patients with specific systemic co-morbidity		
1.Hypertension	998	33
2.Diabetes Mellitus	843	28
3.Ischaemic Heart Disease	278	9
4.Renal Failure	51	3
5.Cerebrovascular accident	19	1
6.COAD/Asthma	169	6
7.Hansen's Disease	3	0
8.Allergies	12	0
Other	193	6

Table 1.9: Pre-operative visual acuity measurement

Pre-operative VA	Unaided		Refracted	
	N=2997	100%	N=260	100%
	No.	%	No.	%
6/5	0	0	0	0
6/6	1	0	4	2
6/9	15	1	20	8
6/12	41	1	33	13
6/18	105	4	30	12
6/24	189	6	27	10
6/36	253	8	29	11
6/60	327	11	28	11
5/60	45	2	4	2
4/60	39	1	5	2
3/60	63	2	6	2
2/60	110	4	6	2
1/60	192	6	10	4
CF	628	21	19	7
HM	737	25	32	12
PL	246	8	7	3
NPL	6	0	0	0

Figure 1.9: Pre-operative visual acuity measurement

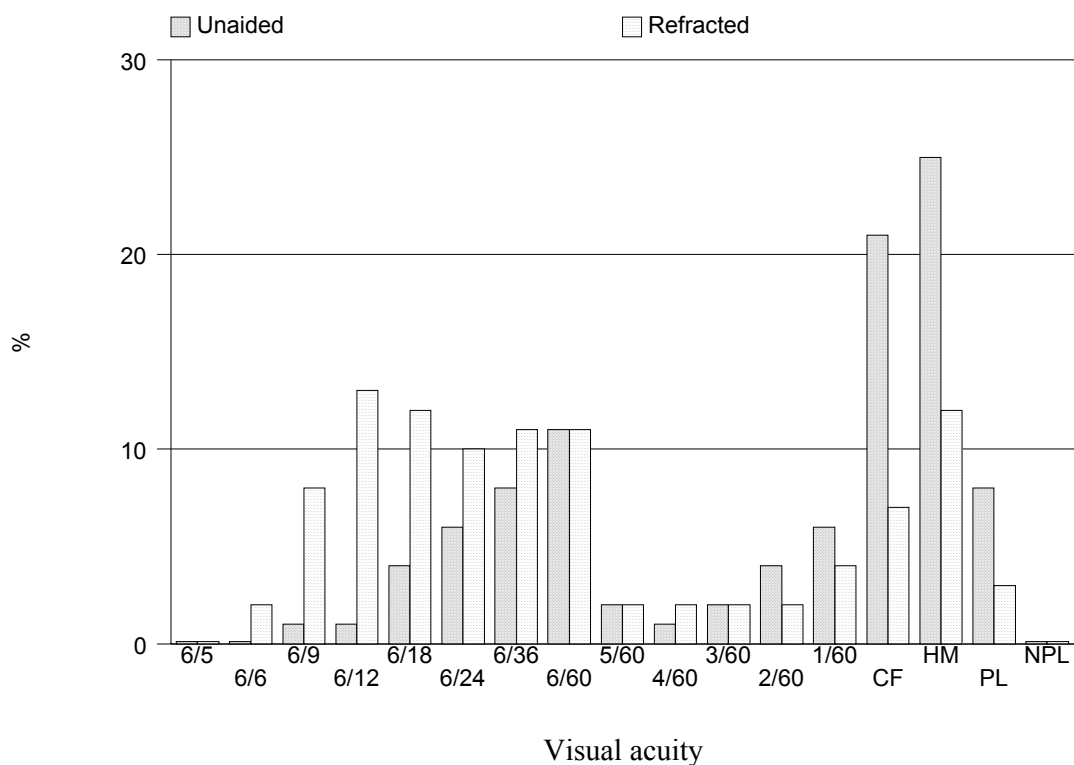


Table 1.10: Causes of cataract

Causes of Cataract	No.	%
N	3011	100
Primary cataract		
Senile/age related	2795	93
Congenital	20	1
Development	44	1
Other	17	1
Secondary cataract		
Trauma	98	3
Drug induced	11	0
Surgery induced	6	0
Other	20	1

CATARACT SURGERY PRACTICE

Distribution of Types of Cataract Surgery by Centre

Distribution of Combined Surgery by Centre

Proportion of Nature of Cataract Surgery

Types of Anaesthesia

Types of Local Anaesthesia

Distribution of Single and Multiple Local Anaesthesia

Types of Sedation given to Patient Having Local Anaesthesia

Distribution of IOL Placement

Distribution of Cataract Surgery without IOL

Distribution of IOL- Material and Types

2. CATARACT SURGICAL PRACTICES

Table 2.1: Distribution of types of cataract surgery by centre

Centre	Types of cataract surgery													
	All surgeries		Lens aspiration		ECCE		PE		PE converted to ECCE		ICCE		Secondary IOL Implant	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All Centres	3016	100	95	3	1682	56	1131	38	77	3	19	1	12	0
A	15	100	0	0	11	73	4	27	0	0	0	0	0	0
B	252	100	3	1	169	67	72	29	2	1	2	1	4	2
C	30	100	2	7	28	93	0	0	0	0	0	0	0	0
D	82	100	2	2	70	85	7	9	3	4	0	0	0	0
E	321	100	8	2	136	42	163	51	12	4	2	1	0	0
F	129	100	9	7	57	44	58	45	3	2	1	1	1	1
G	189	100	9	5	52	28	124	66	2	1	2	1	0	0
H	248	100	10	4	86	35	143	58	8	3	1	0	0	0
I	23	100	0	0	23	100	0	0	0	0	0	0	0	0
J	124	100	1	1	84	68	35	28	4	3	0	0	0	0
K	240	100	8	3	134	56	86	36	10	4	2	1	0	0
L	140	100	6	4	49	35	77	55	5	4	0	0	3	2
M	183	100	3	2	157	86	18	10	1	1	4	2	0	0
N	52	100	0	0	52	100	0	0	0	0	0	0	0	0
O	234	100	8	3	126	54	99	42	1	0	0	0	0	0
P	89	100	6	7	56	63	20	22	5	6	1	1	1	1
Q	105	100	3	3	55	52	42	40	5	5	0	0	0	0
R	33	100	0	0	33	100	0	0	0	0	0	0	0	0
S	111	100	1	1	63	57	45	41	0	0	2	2	0	0
T	139	100	4	3	54	39	69	50	8	6	1	1	3	2
U	207	100	8	4	123	59	67	32	8	4	1	0	0	0
V	70	100	4	6	64	91	2	3	0	0	0	0	0	0

Figure 2.1: Distribution of types of cataract surgery by centre

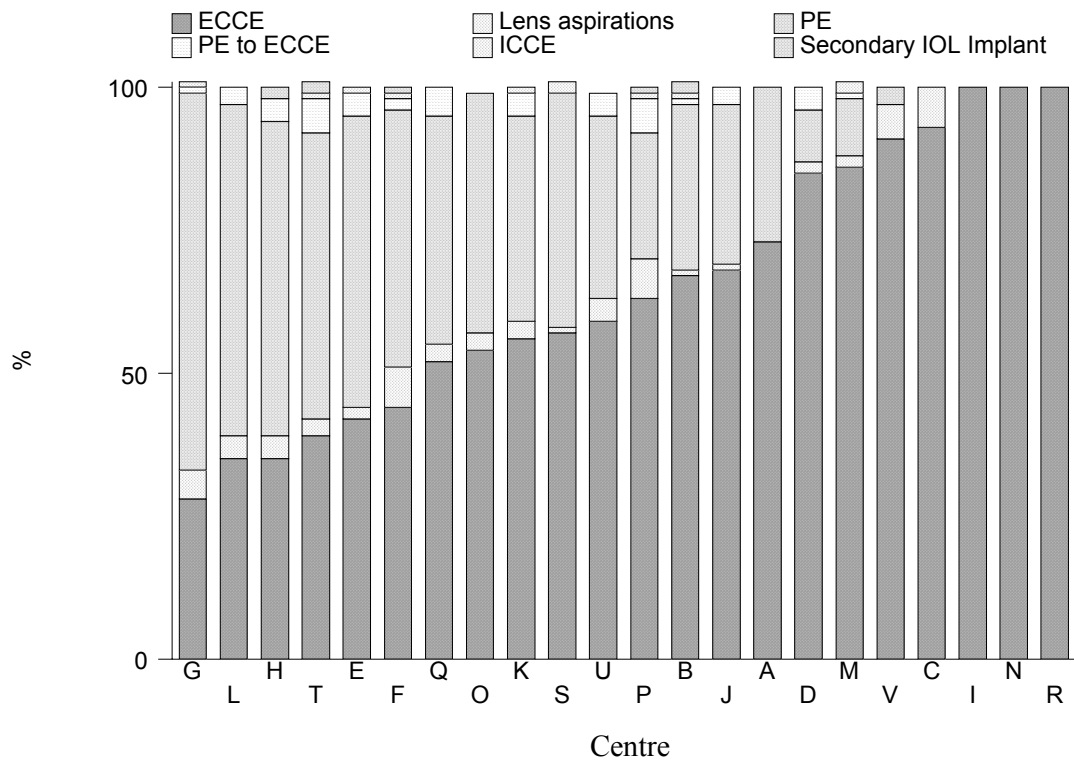


Table 2.2: Distribution of combined surgery by centre

Centre	Combined surgery													
	All surgeries		Any Combined surgery		Pterygium surgery		Filtering surgery		Vitreous-retinal surgery		Penetrating Keratoplasty		Other	
	No.		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All Centres	3016		111	4	24	1	45	1	5	0	0	0	39	1
A	15		1	7	0	0	0	0	0	0	0	0	1	7
B	252		17	7	3	1	3	1	0	0	0	0	11	4
C	30		3	10	2	7	0	0	0	0	0	0	1	3
D	82		4	5	1	1	3	4	0	0	0	0	0	0
E	321		18	6	1	0	11	3	3	1	0	0	4	1
F	129		11	9	4	3	8	6	0	0	0	0	0	0
G	189		7	4	5	3	0	0	0	0	0	0	2	1
H	248		10	4	0	0	6	2	1	0	0	0	3	1
I	23		0	0	0	0	0	0	0	0	0	0	0	0
J	124		2	2	1	1	0	0	0	0	0	0	1	1
K	240		3	1	0	0	3	1	0	0	0	0	0	0
L	140		3	2	2	1	0	0	0	0	0	0	1	1
M	183		6	3	0	0	3	2	1	1	0	0	2	1
N	52		3	6	0	0	1	2	0	0	0	0	2	4
O	234		2	1	0	0	2	1	0	0	0	0	0	0
P	89		1	1	0	0	0	0	0	0	0	0	1	1
Q	105		4	4	0	0	1	1	0	0	0	0	3	3
R	33		2	6	1	3	1	3	0	0	0	0	0	0
S	111		3	3	0	0	1	1	0	0	0	0	2	2
T	139		5	4	3	2	1	1	0	0	0	0	1	1
U	207		4	2	0	0	1	0	0	0	0	0	3	1

Centre	Combined surgery												
	All surgeries	Any Combined surgery		Pterygium surgery		Filtering surgery		Vitreous-retinal surgery		Penetrating Keratoplasty		Other	
No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
V	70	2	3	1	1	0	0	0	0	0	0	1	1

Table 2.3: Proportion of nature of cataract surgery

Centre	N	Nature of cataract surgery			
		Emergency		Elective	
		No.	%	No.	%
All Centres	3016	36	1	2980	99
A	15	0	0	15	100
B	252	1	0	251	100
C	30	0	0	30	100
D	82	0	0	82	100
E	321	5	2	316	98
F	129	1	1	128	99
G	189	0	0	189	100
H	248	0	0	248	100
I	23	0	0	23	100
J	124	0	0	124	100
K	240	6	3	234	98
L	140	1	1	139	99
M	183	1	1	182	99
N	52	2	4	50	96
O	234	4	2	230	98
P	89	3	3	86	97

Q	105	0	0	105	100
R	33	0	0	33	100
S	111	0	0	111	100
T	139	1	1	138	99
U	207	10	5	197	95
V	70	1	1	69	99

Table 2.4: Type of anaesthesia

Centre	N	Types of anaesthesia			
		General		Local	
		No.	%	No.	%
All Centres	3016	187	6	2829	94
A	15	0	0	15	100
B	252	6	2	246	98
C	30	2	7	28	93
D	82	2	2	80	98
E	321	21	7	300	93
F	129	15	12	114	88
G	189	6	3	183	97
H	248	13	5	235	95
I	23	1	4	22	96
J	124	0	0	124	100
K	240	18	8	222	93
L	140	5	4	135	96
M	183	6	3	177	97
N	52	5	10	47	90
O	234	16	7	218	93
P	89	7	8	82	92
Q	105	4	4	101	96
R	33	3	9	30	91
S	111	2	2	109	98
T	139	19	14	120	86
U	207	27	13	180	87
V	70	9	13	61	87

Figure 2.4: Type of anaesthesia

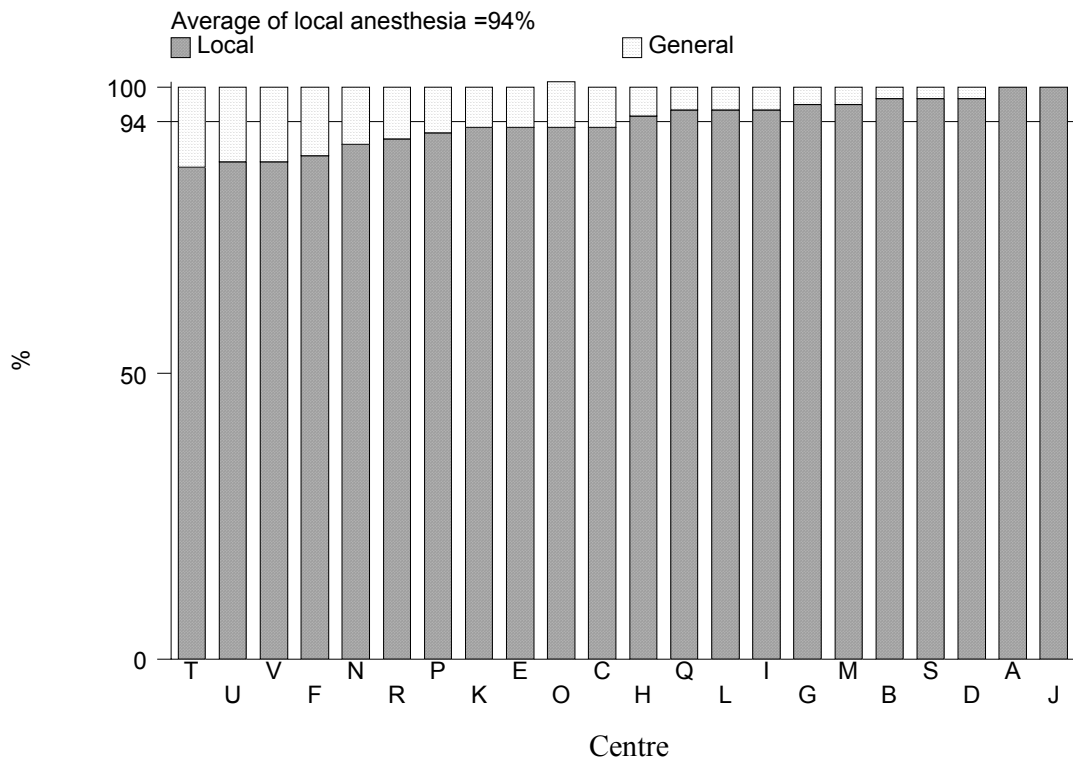


Table 2.5: Type of local anaesthesia

Centre	Local anaesthesia														
	N	Retrobulbar		Peribulbar		Subtenon		Subconjunctival		Facial block		Topical		Other	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All Centres	2829	851	30	545	19	1351	48	7	0	363	13	200	7	1	0
A	15	0	0	0	0	15	100	0	0	0	0	0	0	0	0
B	246	228	93	1	0	24	10	0	0	144	59	0	0	0	0
C	28	28	100	0	0	0	0	0	0	28	100	0	0	0	0
D	80	1	1	0	0	79	99	0	0	0	0	0	0	0	0
E	300	5	2	107	36	181	60	0	0	5	2	25	8	0	0
F	114	0	0	0	0	75	66	3	3	0	0	36	32	0	0
G	183	13	7	164	90	16	9	0	0	36	20	31	17	0	0
H	235	0	0	3	1	150	64	0	0	0	0	83	35	0	0
I	22	0	0	22	100	0	0	0	0	0	0	1	5	0	0
J	124	0	0	0	0	124	100	0	0	0	0	0	0	0	0
K	222	3	1	0	0	217	98	0	0	1	0	1	0	1	0
L	135	123	91	8	6	0	0	2	1	104	77	17	13	0	0
M	177	27	15	148	84	28	16	1	1	2	1	0	0	0	0

Centre		Local anaesthesia													
		Retrobulbar		Peribulbar		Subtenon		Subconjunctival		Facial block		Topical		Other	
N		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	47	47	100	0	0	0	0	0	0	13	28	0	0	0	0
O	218	146	67	28	13	44	20	1	0	0	0	0	0	0	0
P	82	54	66	28	34	0	0	0	0	0	0	0	0	0	0
Q	101	1	1	0	0	95	94	0	0	0	0	5	5	0	0
R	30	0	0	30	100	0	0	0	0	30	100	0	0	0	0
S	109	24	22	0	0	85	78	0	0	0	0	0	0	0	0
T	120	107	89	4	3	23	19	0	0	0	0	0	0	0	0
U	180	42	23	1	1	137	76	0	0	0	0	1	1	0	0
V	61	2	3	1	2	58	95	0	0	0	0	0	0	0	0

* % May add to more than 100 % as one patient might have more than one type of local anaesthesia.

Table 2.6: Distribution of single and multiple local anaesthesia

Centre	N	Local anaesthesia			
		Single		Multiple	
		No.	%	No.	%
All Centres	2829	2371	84	458	16
A	15	15	100	0	0
B	246	99	40	147	60
C	28	0	0	28	100
D	80	80	100	0	0
E	300	280	93	20	7
F	114	114	100	0	0
G	183	113	62	70	38
H	235	234	100	1	0
I	22	21	95	1	5
J	124	124	100	0	0
K	222	221	100	1	0
L	135	32	24	103	76
M	177	149	84	28	16
N	47	34	72	13	28
O	218	217	100	1	0
P	82	82	100	0	0
Q	101	101	100	0	0
R	30	0	0	30	100
S	109	109	100	0	0
T	120	106	88	14	12
U	180	179	99	1	1
V	61	61	100	0	0

Table 2.7: Type of sedation given to patient who had local anaesthesia

Centre	N	Types of sedation									
		No sedation		Oral alone		Intravenous alone		Intravenous plus oral		Intra-muscular	
		No.	%	No.	%	No.	%	No.	%	No.	%
All Centres	2829	1567	55	1058	37	50	2	43	2	121	4
A	15	15	100	0	0	0	0	0	0	0	0
B	246	131	53	102	41	8	3	6	2	0	0
C	28	1	4	0	0	24	86	0	0	3	11
D	80	0	0	0	0	0	0	0	0	80	100
E	300	134	45	133	44	9	3	24	8	0	0
F	114	110	96	3	3	1	1	0	0	0	0
G	183	182	99	1	1	0	0	0	0	0	0
H	235	234	100	0	0	1	0	0	0	0	0
I	22	15	68	3	14	1	5	0	0	3	14
J	124	122	98	2	2	0	0	0	0	0	0
K	222	80	36	141	64	0	0	1	0	0	0
L	135	134	99	1	1	0	0	0	0	0	0
M	177	5	3	164	93	0	0	5	3	11	6
N	47	7	15	40	85	0	0	0	0	0	0
O	218	8	4	208	95	2	1	0	0	0	0
P	82	1	1	81	99	0	0	0	0	0	0
Q	101	101	100	0	0	0	0	0	0	0	0
R	30	5	17	25	83	0	0	0	0	0	0
S	109	109	100	0	0	0	0	0	0	0	0
T	120	117	98	0	0	1	1	2	2	0	0
U	180	49	27	129	72	1	1	1	1	0	0
V	61	7	11	25	41	2	3	4	7	24	39

* % May add to more than 100 % as one patient might have more than one type of sedation.

Table 2.8: Distribution of IOL placement

Centre		Cataract surgery with IOL					
		Posterior chamber IOL		Anterior chamber IOL		Scleral IOL	fixated
	N	No.	%	No.	%	No.	%
All Centres	2932	2831	97	98	3	3	0
A	15	12	80	3	20	0	0
B	249	243	98	6	2	0	0
C	26	26	100	0	0	0	0
D	82	80	98	2	2	0	0
E	309	296	96	13	4	0	0
F	126	121	96	5	4	0	0
G	180	177	98	3	2	0	0
H	240	238	99	2	1	0	0
I	21	21	100	0	0	0	0
J	124	117	94	7	6	0	0
K	232	216	93	16	7	0	0
L	138	130	94	8	6	0	0
M	176	174	99	2	1	0	0
N	52	48	92	4	8	0	0
O	228	225	99	3	1	0	0
P	85	79	93	6	7	0	0
Q	102	102	100	0	0	0	0
R	32	31	97	1	3	0	0
S	109	104	95	5	5	0	0
T	138	134	97	1	1	3	2
U	200	191	96	9	5	0	0
V	68	66	97	2	3	0	0

Table 2.9: Distribution of cataract surgery without IOL

Centre	Cataract surgery without IOL				
	N	IOL planned but not implanted		No IOL was planed	
		No.	%	No.	%
All Centres	84	28	33	56	67
A	0	0		0	
B	3	0	0	3	100
C	4	2	50	2	50
D	0	0		0	
E	12	3	25	9	75
F	3	0	0	3	100
G	9	2	22	7	78
H	8	3	38	5	63
I	2	2	100	0	0
J	0	0		0	
K	8	2	25	6	75
L	2	0	0	2	100
M	7	2	29	5	71
N	0	0		0	
O	6	4	67	2	33
P	4	1	25	3	75
Q	3	1	33	2	67
R	1	0	0	1	100
S	2	2	100	0	0
T	1	1	100	0	0
U	7	1	14	6	86
V	2	2	100	0	0

Table 2.10: Distribution of IOL- materials and types

IOL	No.	%
N	2932	100
Materials		
PMMA	2302	79
Silicone	338	12
Acrylic	290	10
Other	2	0
Types		
Foldable	672*	23
Non-foldable	2260**	77

* 77 PMMA IOL were recorded as foldable

** 17 Silicone IOL were recorded as non-foldable

** 18 Acrylic IOL were recorded as non-foldable

CATARACT SURGERY OUTCOMES

Cataract Surgery Complications- Intra-Operative

Cataract Surgery Complications - Post-Operative

Analysis On Cataract Surgery Visual Outcome

Post-operative Visual Acuity

Post-Operative Refracted VA Improved By One Or More Line Of Snellen Chart

Factors Contributing To Post-Operative Visual Acuity Worse Than 6/12

3. CATARACT SURGERY OUTCOMES

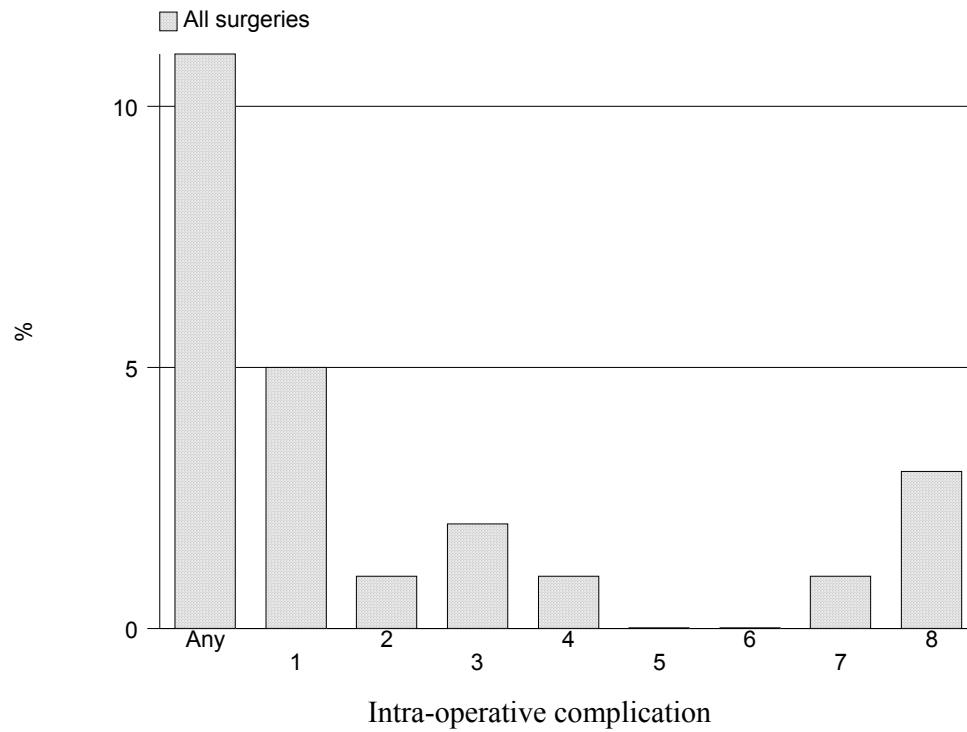
3.1: Cataract Surgery Complications

Table 3.1.1: Distribution of intra-operative complications by type of cataract surgery

Type of intra-operative complications	Types of cataract surgery													
	All surgeries		Lens Aspiration		ECCE		PE		PE to ECCE		ICCE		Secondary IOL Implant	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	3016	100	95	100	1682	100	1131	100	77	100	19	100	12	100
Any intra-op complication	343	11	16	17	176	10	102	9	41	53	8	42	0	0
1. Posterior capsule rupture with vitreous loss	140	5	4	4	70	4	42	4	24	31	0	0	0	0
2. Posterior capsule rupture without vitreous loss	34	1	2	2	18	1	6	1	4	5	4	21	0	0
3. Zonular dialysis with vitreous loss	47	2	5	5	18	1	23	2	1	1	0	0	0	0
4. Zonular dialysis without vitreous loss	29	1	3	3	13	1	11	1	2	3	0	0	0	0
5. Loss of nucleus material into vitreous	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Choroidal/suprachoroidal haemorrhage	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Significant trauma to cornea or iris	22	1	1	1	13	1	7	1	1	1	0	0	0	0
8. Other	79	3	2	2	47	3	16	1	10	13	4	21	0	0

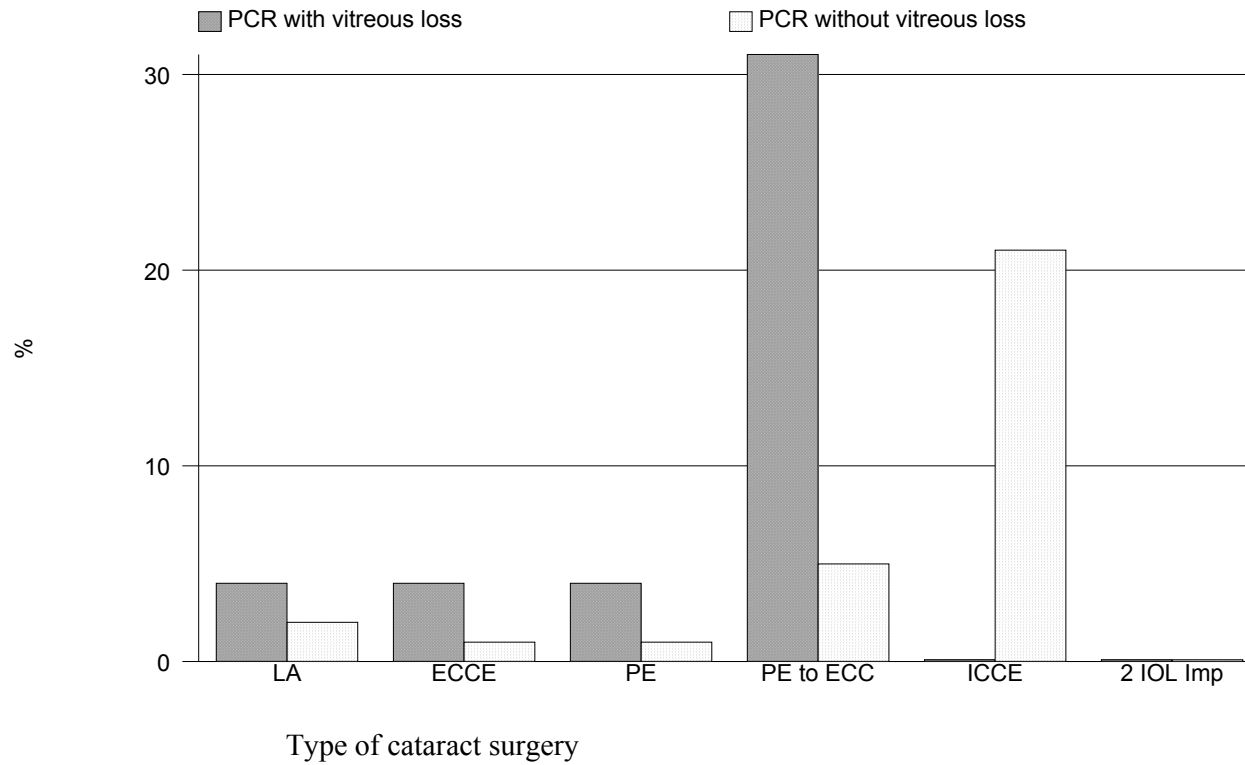
* Number in each column might add up to be more than that recorded at row with 'Any intra-op complication' as one patient might have more than one type of intra-operative complications.

Figure 3.1.1.1: Distribution of intra-operative complication



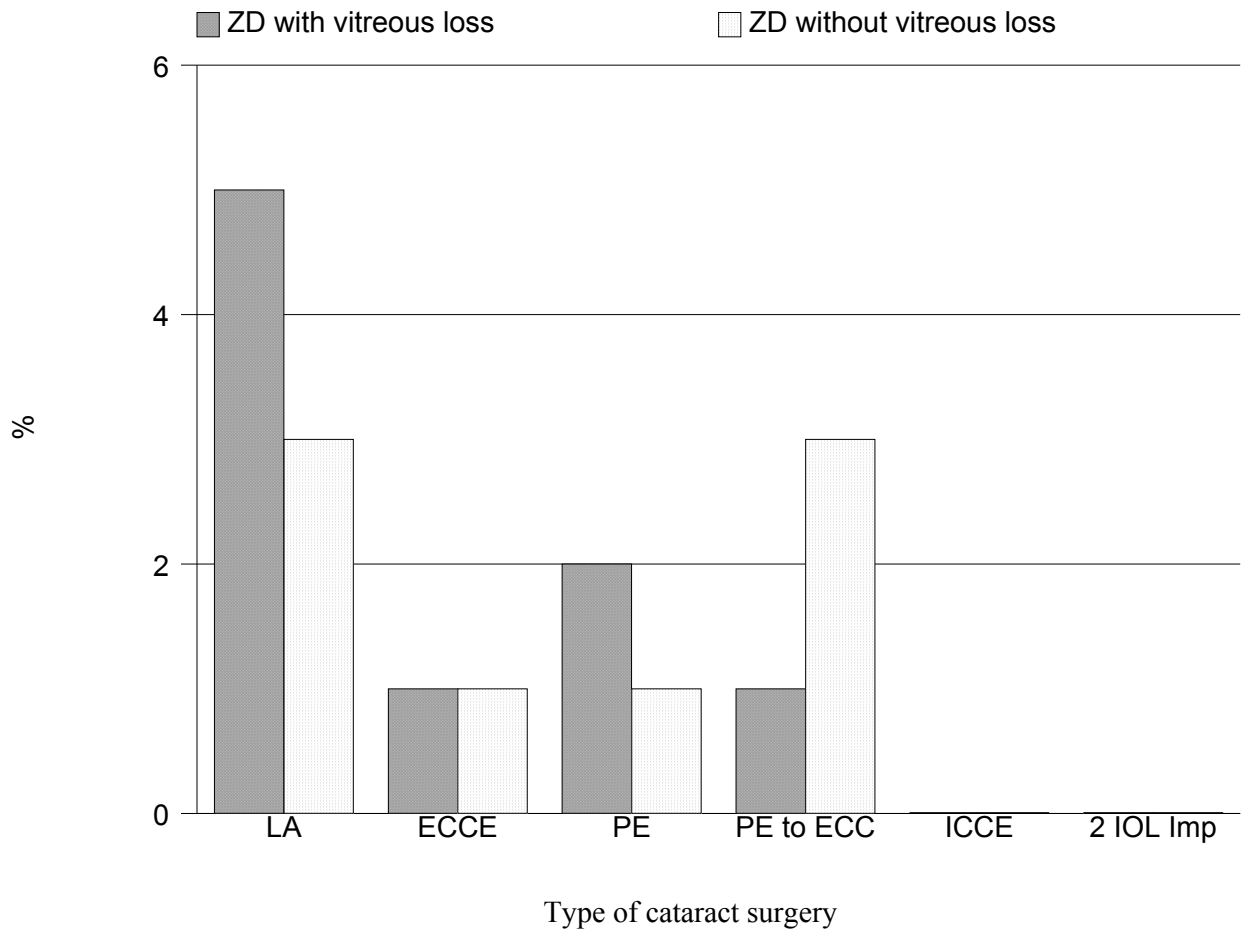
Intra-op complication: Index refers to table 3.1.1

Figure 3.1.1.2: Distribution of intra-operative complication by posterior capsule rupture with vitreous loss and posterior capsule rupture without vitreous loss



* LA= Lens aspiration
 * 2 IOL Imp= Secondary IOL Implant

Figure 3.1.1.3: Distribution of intra-operative complication by zonular dialysis with vitreous loss and zonular dialysis without vitreous loss



* LA= Lens aspiration

* 2 IOL Imp= Secondary IOL Implant

Table 3.1.2: Distribution of intra-operative complications by combined surgery

Type of intra-operative complications	Combined surgery													
	All surgeries		Any Combined surgery		Pterygium surgery		Filtering surgery		Vitreoretinal surgery		Penetrating Keratoplasty		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	3016	100	111	100	24	100	45	100	5	100	0		39	100
Any intra-op complication	343	11	18	16	3	13	6	13	2	40	0		8	21
1. Posterior capsule rupture with vitreous loss	140	5	6	5	0	0	2	4	0	0	0		4	10
2. Posterior capsule rupture without vitreous loss	34	1	3	3	1	4	0	0	0	0	0		2	5
3. Zonular dialysis with vitreous loss	47	2	1	1	0	0	1	2	0	0	0		0	0
4. Zonular dialysis without vitreous loss	29	1	3	3	0	0	2	4	1	20	0		0	0
5. Loss of nucleus material into vitreous	0	0	0	0	0	0	0	0	0	0	0		0	0
6. Choroidal/suprachoroidal haemorrhage	0	0	0	0	0	0	0	0	0	0	0		0	0

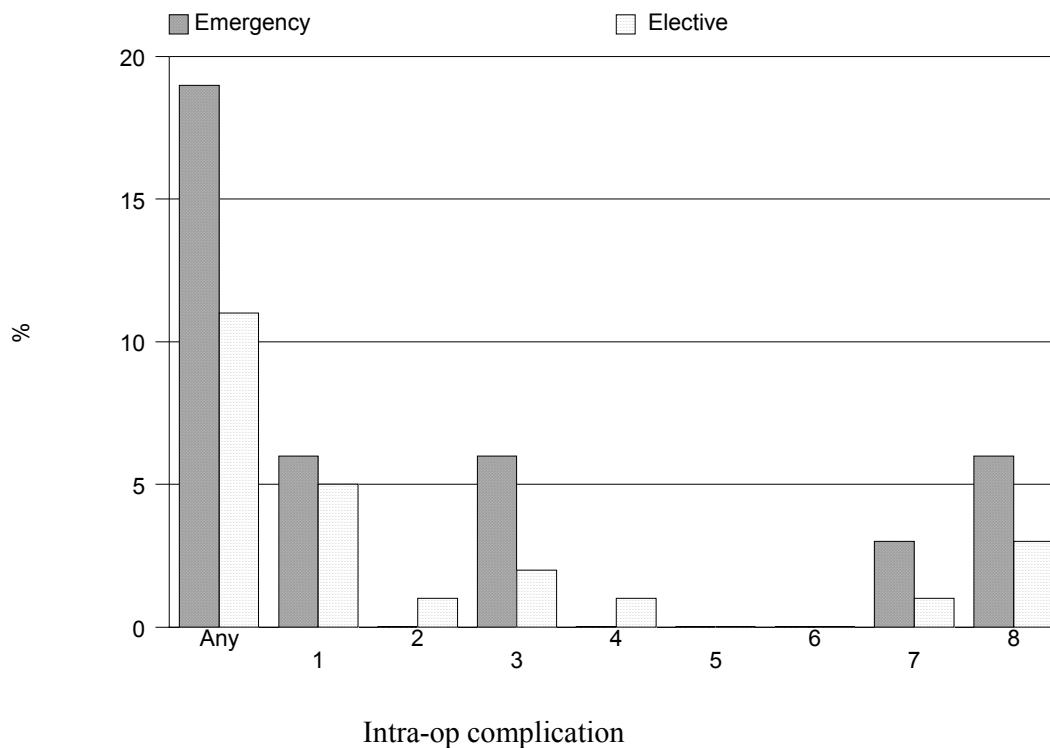
Type of intra-operative complications	Combined surgery													
	All surgeries		Any Combined surgery		Pterygium surgery		Filtering surgery		Vitreoretinal surgery		Penetrating Keratoplasty		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
7. Significant trauma to cornea or iris	22	1	1	1	1	4	0	0	0	0	0	0	0	0
8. Other	79	3	5	5	1	4	2	4	1	20	0		2	5

Number in each column might add up to be more than that recorded at row with 'Any intra-operative complication' as one patient might have more than one type of intra-operative complications

Table 3.1.3: Distribution of intra-operative complications by nature of cataract surgery

Type of intra-operative complications	Nature of cataract surgery					
	All patients		Emergency		Elective	
	No.	%	No.	%	No.	%
N	3016	100	36	100	2980	100
Any intra-op complication	343	11	7	19	336	11
1. Posterior capsule rupture with vitreous loss	140	5	2	6	138	5
2. Posterior capsule rupture without vitreous loss	34	1	0	0	34	1
3. Zonular dialysis with vitreous loss	47	2	2	6	45	2
4. Zonular dialysis without vitreous loss	29	1	0	0	29	1
5. Loss of nucleus material into vitreous	0	0	0	0	0	0
6. Choroidal/suprachoroidal haemorrhage	0	0	0	0	0	0
7. Significant trauma to cornea or iris	22	1	1	3	21	1
8. Other	79	3	2	6	77	3

Figure 3.1.3: Distribution of intra-operative complications by nature of cataract surgery

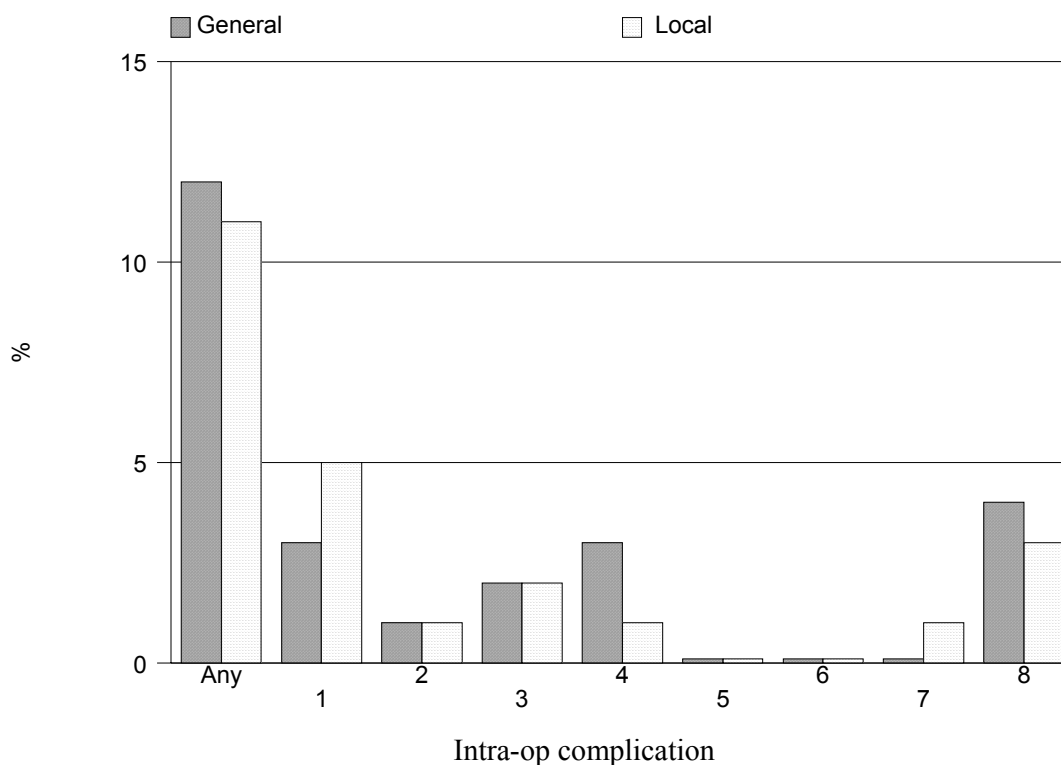


Intra-op complication: Index refers to table 3.1.03

Table 3.1.4: Distribution of intra-operative complications by type of anaesthesia

Type of intra-operative complications	Types of anaesthesia					
	All patients		General		Local	
	No.	%	No.	%	No.	%
N	3016	100	187	100	2829	100
Any intra-op complication	343	11	22	12	321	11
1. Posterior capsule rupture with vitreous loss	140	5	6	3	134	5
2. Posterior capsule rupture without vitreous loss	34	1	1	1	33	1
3. Zonular dialysis with vitreous loss	47	2	3	2	44	2
4. Zonular dialysis without vitreous loss	29	1	5	3	24	1
5. Loss of nucleus material into vitreous	0	0	0	0	0	0
6. Choroidal/suprachoroidal haemorrhage	0	0	0	0	0	0
7. Significant trauma to cornea or iris	22	1	0	0	22	1
8. Other	79	3	8	4	71	3

Figure 3.1.04: Distribution of intra-operative complications by type of anaesthesia



Intra-op complication: Index refers to table 3.1.4

Table 3.1.5: Distribution of intra-operative complications by type of local anaesthesia

Type of intra-op complications	Types of local anaesthesia															
	Local anaesthesia		Retrobular		Peribulbar		Subtenon		Sub-conjunctival		Facial block		Topical		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N	2829	100	851	100	545	100	1351	100	7	100	363	100	200	100	1	100
Any intra-op complication	321	11	73	9	52	10	198	15	0	0	28	8	16	8	0	0
1. Posterior capsule rupture with vitreous loss	134	5	39	5	18	3	72	5	0	0	19	5	11	6	0	0
2. Posterior capsule rupture without vitreous loss	33	1	7	1	7	1	19	1	0	0	1	0	1	1	0	0
3. Zonular dialysis with vitreous loss	44	2	8	1	4	1	34	3	0	0	3	1	1	1	0	0
4. Zonular dialysis without vitreous loss	24	1	7	1	4	1	13	1	0	0	2	1	2	1	0	0
5. Loss of nucleus material into vitreous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

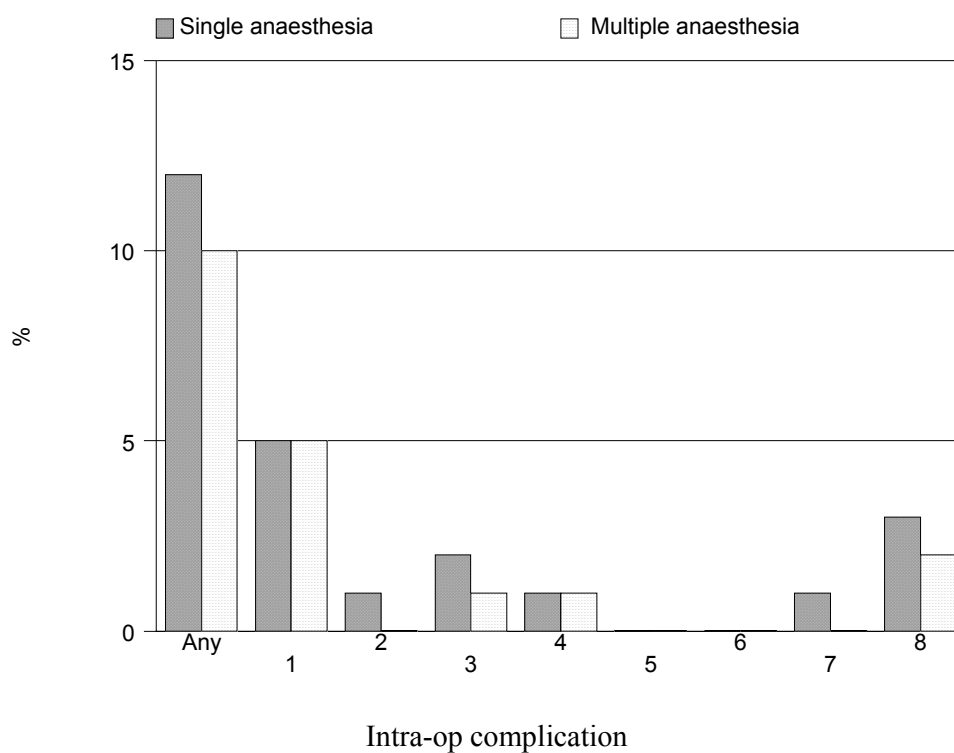
Type of intra-op complications	Types of local anaesthesia															
	Local anaesthesia		Retrobular		Peribulbar		Subtenon		Sub-conjunctival		Facial block		Topical		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
6.Choroidal/suprachoroidal haemorrhage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.Significant trauma to cornea or iris	22	1	4	0	5	1	13	1	0	0	0	0	0	0	0	0
8.Other	71	3	12	1	16	3	48	4	0	0	3	1	1	1	0	0

* Number in each column might add up to be more than that recorded at row with ‘ Any intra-op complication’ as one patient might have more than one type of intra-operative complications

Table 3.1.6: Distribution of intra-operative complications by single or multiple local anaesthesia

Type of intra-operative complications	Local anaesthesia			
	Single		Multiple	
	No.	%	No.	%
N	2371	100	458	100
Any intra-op complication	277	12	44	10
1. Posterior capsule rupture with vitreous loss	110	5	24	5
2. Posterior capsule rupture without vitreous loss	31	1	2	0
3. Zonular dialysis with vitreous loss	39	2	5	1
4. Zonular dialysis without vitreous loss	20	1	4	1
5. Loss of nucleus material into vitreous	0	0	0	0
6. Choroidal/suprachoroidal haemorrhage	0	0	0	0
7. Significant trauma to cornea or iris	22	1	0	0
8. Other	62	3	9	2

Figure 3.1.6: Distribution of intra-operative complications by single or multiple local anaesthesia



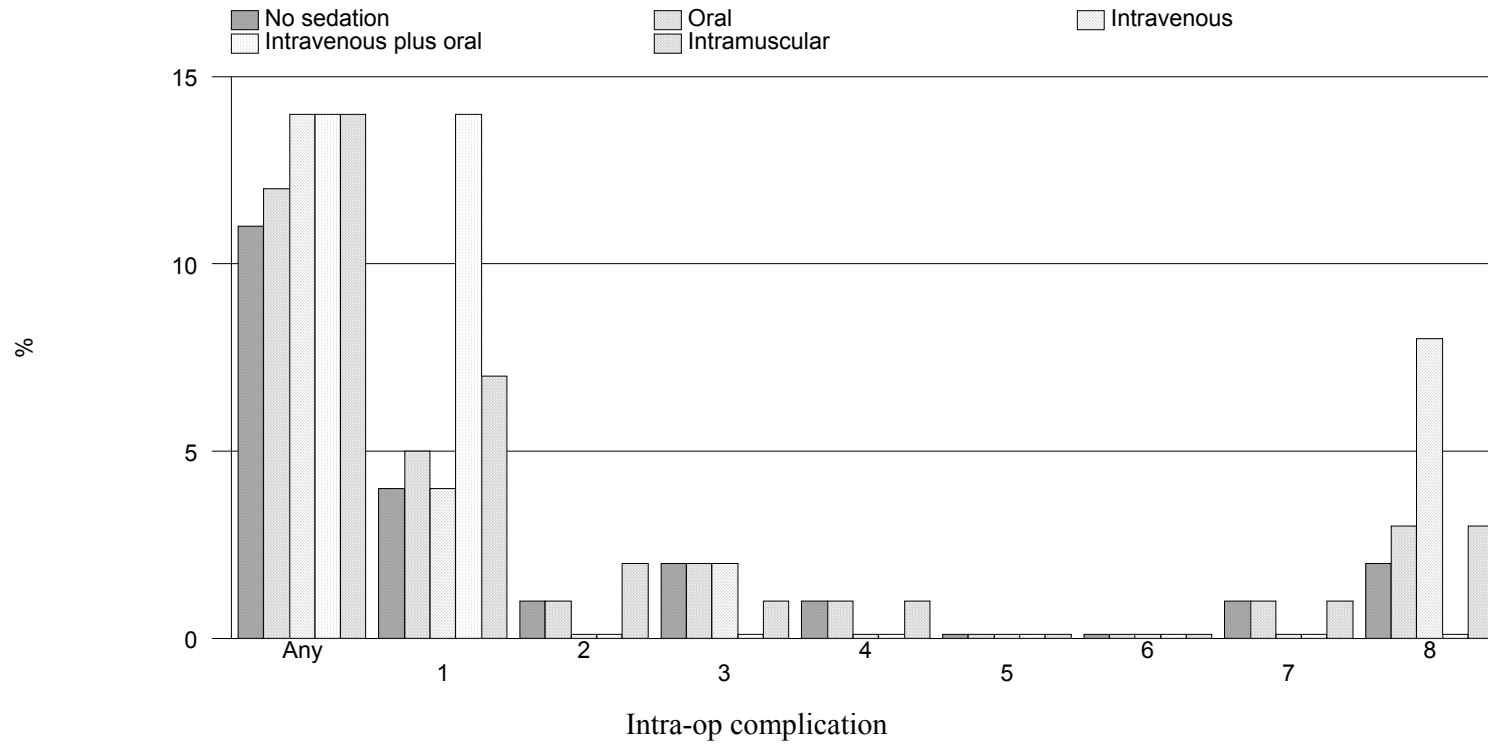
Intra-op complication: Index refers to table 3.1.06

Table 3.1.7: Distribution of intra-operative complications by type of sedation

Type of intra-operative complications	Types of sedation									
	No sedation		Oral alone		Intravenous alone		Intravenous plus oral		Intramuscular	
	No.	%	No.	%	No.	%	No.	%	No.	%
N	1567	100	1058	100	50			100	121	100
Any intra-op complication	167	11	128	12	7	14	6	14	17	14
1. Posterior capsule rupture with vitreous loss	65	4	55	5	2	4	6	14	9	7
2. Posterior capsule rupture without vitreous loss	20	1	11	1	0	0	0	0	2	2
3. Zonular dialysis with vitreous loss	26	2	16	2	1	2	0	0	1	1
4. Zonular dialysis without vitreous loss	14	1	9	1	0	0	0	0	1	1
5. Loss of nucleus material into vitreous	0	0	0	0	0	0	0	0	0	0
6. Choroidal/suprachoroidal haemorrhage	0	0	0	0	0	0	0	0	0	0
7. Significant trauma to cornea or iris	15	1	7	1	0	0	0	0	1	1
8. Other	32	2	31	3	4	8	0	0	4	3

* Number in each column might add up to be more than that recorded at row with 'Any intra-op complication' as one patient might have more than one type of intra-operative complications

Figure 3.1.7: Distribution of intra-operative complications by type of sedation

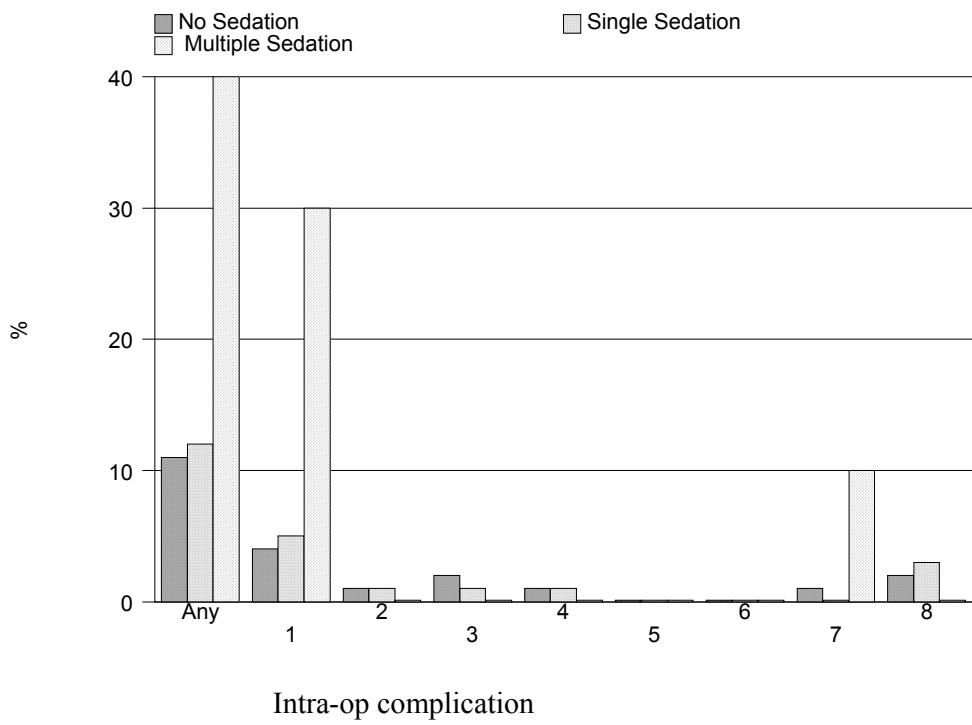


Intra-op complication: Index refers to table 3.1.7

Table 3.1.8: Distribution of intra-operative complications by sedation

Type of intra-operative complications	Sedation					
	No sedation		Single		Multiple	
	No.	%	No.	%	No.	%
N	1567	100	1252	100	10	100
Any intra-op complication	167	11	150	12	4	40
1. Posterior capsule rupture with vitreous loss	65	4	66	5	3	30
2. Posterior capsule rupture without vitreous loss	20	1	13	1	0	0
3. Zonular dialysis with vitreous loss	26	2	18	1	0	0
4. Zonular dialysis without vitreous loss	14	1	10	1	0	0
5. Loss of nucleus material into vitreous	0	0	0	0	0	0
6. Choroidal/suprachoroidal haemorrhage	0	0	0	0	0	0
7. Significant trauma to cornea or iris	15	1	6	0	1	10
8. Other	32	2	39	3	0	0

Figure 3.1.8: Distribution of intra-operative complications by sedation

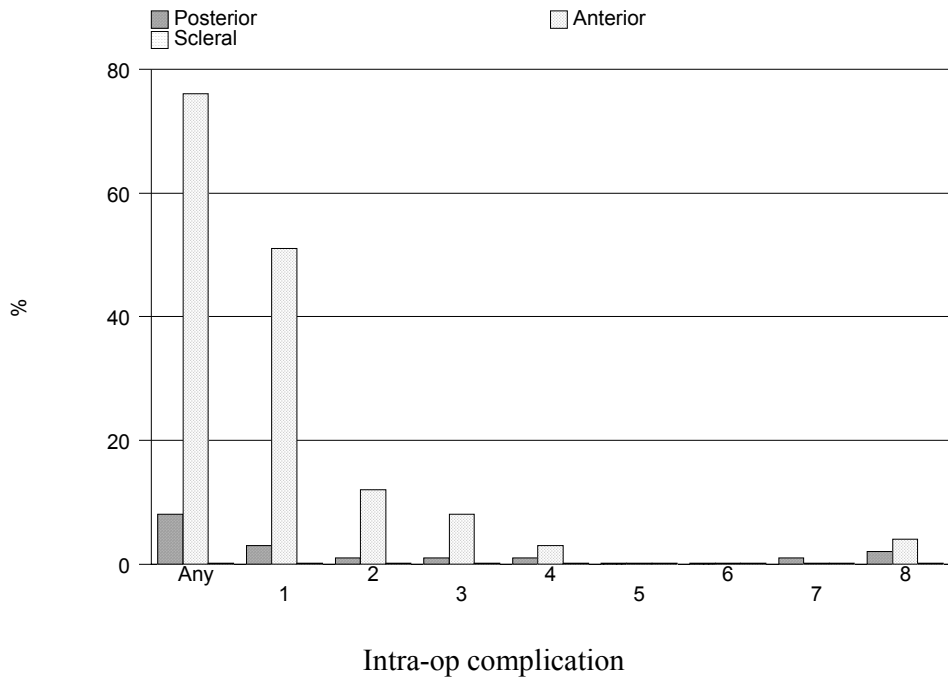


Intra-op complication: Index refers to table 3.1.8

Table 3.1.9: Distribution of intra-operative complications by cataract surgery with IOL

Type of intra-operative complications	Cataract surgery with IOL							
	All patients with IOL		Posterior chamber IOL		Anterior chamber IOL		Scleral fixated IOL	
	No.	%	No.	%	No.	%	No.	%
N	2932	100	2831	100	98	100	3	100
Any intra-op complication	312	11	238	8	74	76	0	0
1. Posterior capsule rupture with vitreous loss	128	4	78	3	50	51	0	0
2. Posterior capsule rupture without vitreous loss	27	1	15	1	12	12	0	0
3. Zonular dialysis with vitreous loss	45	2	37	1	8	8	0	0
4. Zonular dialysis without vitreous loss	25	1	22	1	3	3	0	0
5. Loss of nucleus material into vitreous	0	0	0	0	0	0	0	0
6. Choroidal/suprachoroidal haemorrhage	0	0	0	0	0	0	0	0
7. Significant trauma to cornea or iris	21	1	21	1	0	0	0	0
8. Other	72	2	68	2	4	4	0	0

Figure 3.1.9: Distribution of intra-operative complications by cataract surgery with IOL

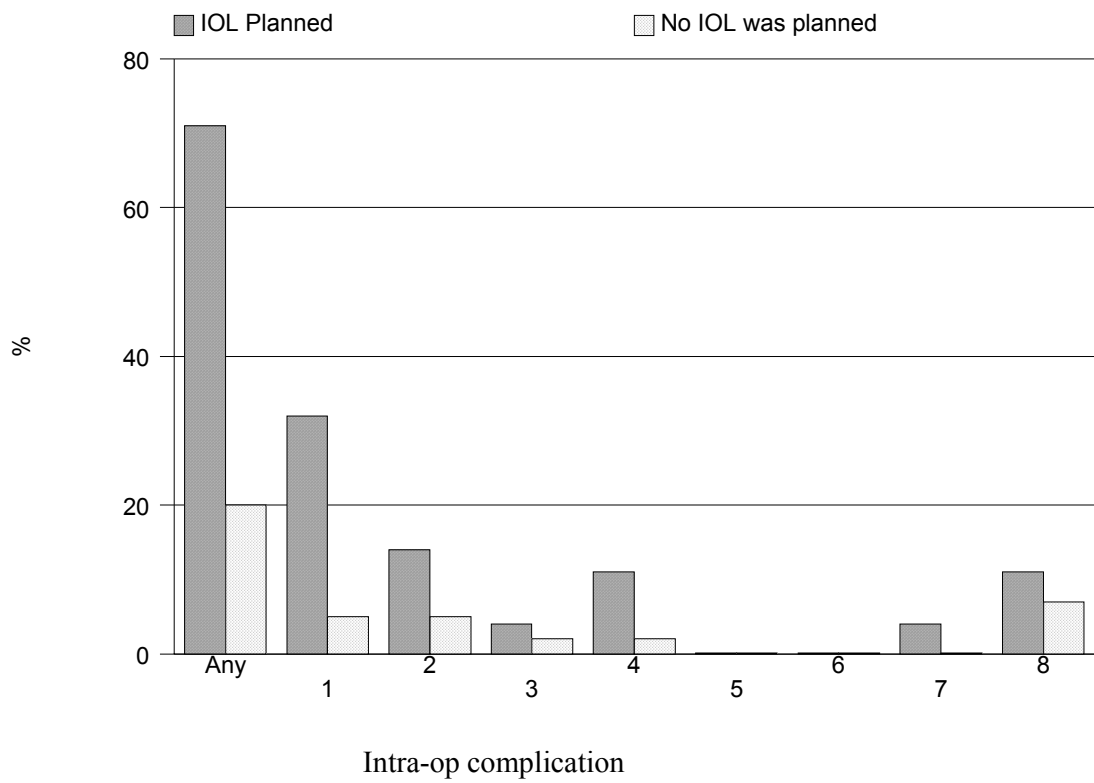


Intra-op complication: Index refers to table 3.1.09

Table 3.1.10: Distribution of intra-operative complications by cataract surgery without IOL

Type of intra-operative complications	Cataract surgery without IOL					
	All patients without IOL		IOL planned, but not implanted		No IOL was planned	
	No.	%	No.	%	No.	%
N	84	100	28	100	56	100
Any intra-op complication	31	37	20	71	11	20
1. Posterior capsule rupture with vitreous loss	12	14	9	32	3	5
2. Posterior capsule rupture without vitreous loss	7	8	4	14	3	5
3. Zonular dialysis with vitreous loss	2	2	1	4	1	2
4. Zonular dialysis without vitreous loss	4	5	3	11	1	2
5. Loss of nucleus material into vitreous	0	0	0	0	0	0
6. Choroidal/suprachoroidal haemorrhage	0	0	0	0	0	0
7. Significant trauma to cornea or iris	1	1	1	4	0	0
8. Other	7	8	3	11	4	7

Figure 3.1.10: Distribution of intra-operative complications by cataract surgery without IOL



Intra-op complication: Index refers to table 3.1.10

3.2 Post-Operative Complications

Table 3.2.1: Distribution of post-operative complications

Post-operative complications	No.	%
N	3016	100
Patients with any post-op complication	429	14
Patients with specific post-op complication		
1. Central oedema within 4mm of visual axis	118	4
2. Raised IOP of more than 30mmHg	46	2
3. Suture abscess	11	0
4. Severe iritis with fibrin	13	0
5. Iris prolapse/wound dehiscence	8	0
6. Vitreous incarceration into wad	5	0
7. Vitreous in AC touching cornea	2	0
8. IOL decentration/dislocation	8	0
9. Cystoid macular oedema	21	1
10. Endophthalmitis	2	0
11. New retinal break	0	0
12. Retinal detachment	4	0
13. Astigmatism of > 3 dioptres	134	4
14. Posterior capsule opacification	31	1
15. Other	79	3

3.3 Analysis On Cataract Surgery Outcome

Table 3.3.1: Median follow-up period in weeks (Patients with only unaided vision, refraction was not performed)

Type of surgery	N	Median	25 th percentile	75 th percentile
All surgeries	555	8.1	3.9	12.1
Lens aspiration	24	6.1	3.6	9.2
ECCE	305	8	2.7	12
PE	208	8.1	4.6	12.2
PE to ECCE	13	12.9	7.4	14.1
ICCE	2	16.7	9.9	23.6
Secondary IOL Implant	3	13.7	11.1	15.6

Post –operative visual acuity was not recorded in 86 patients.

Table 3.3.2: Median follow-up period in weeks (Patients with refracted vision)

Type of surgery	N	Median	25 th percentile	75 th percentile
All surgeries	2404	10.9	7.7	13.9
Lens aspiration	62	11.6	7.9	15.3
ECCE	1349	11.3	7.9	13.7
PE	905	10.1	7.3	13.7
PE to ECCE	63	12.1	9.1	14.1
ICCE	16	11.3	7.5	15.5
Secondary IOL Implant	9	10.4	7.7	18.3

3.4 Post-Operative Visual Acuity

Table 3.4.1: Distribution of post-operative VA

VA post operative	Unaided		Refracted	
	N=2930	100%	N=2404	100%
	No.	%	No.	%
6/5	4	0	24	1
6/6	142	5	633	26
6/9	438	15	876	36
6/12	531	18	368	15
6/18	524	18	185	8
6/24	498	17	116	5
6/36	322	11	70	3
6/60	217	7	30	1
5/60	13	0	4	0
4/60	20	1	5	0
3/60	30	1	11	0
2/60	29	1	19	1
1/60	33	1	17	1
CF	54	2	15	1
HM	52	2	23	1
PL	13	0	6	0
NPL	10	0	2	0

Figure 3.4.1.1: Distribution of post-operative VA

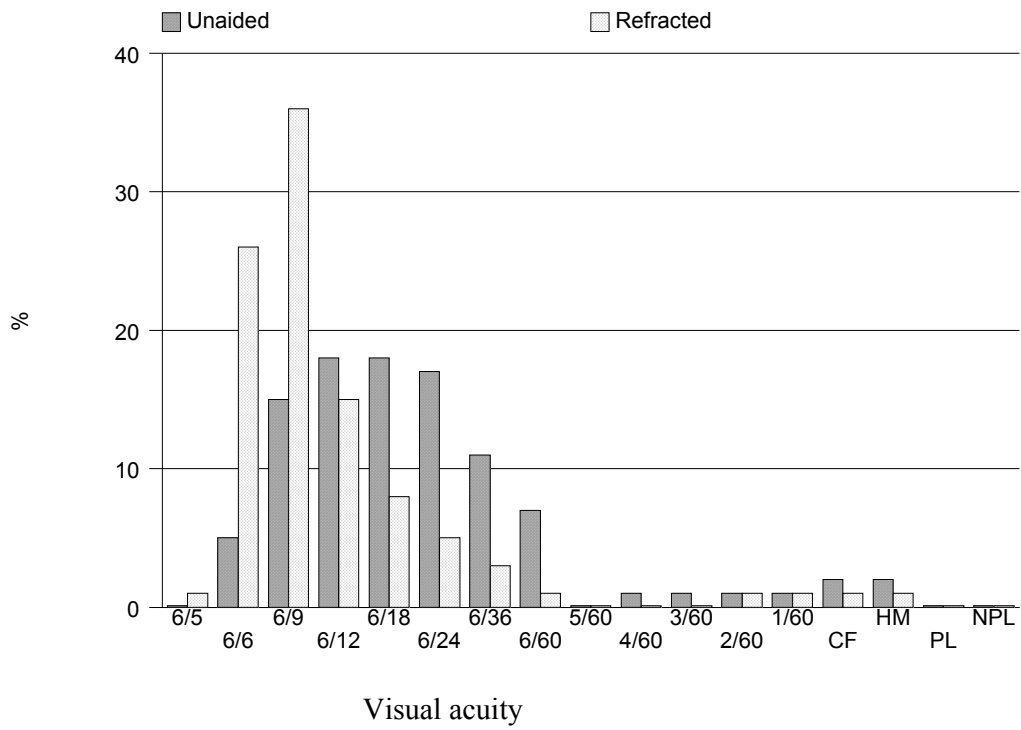


Figure 3.4.1.2: Cumulative distribution of visual acuity by pre- and post-operative unaided VA

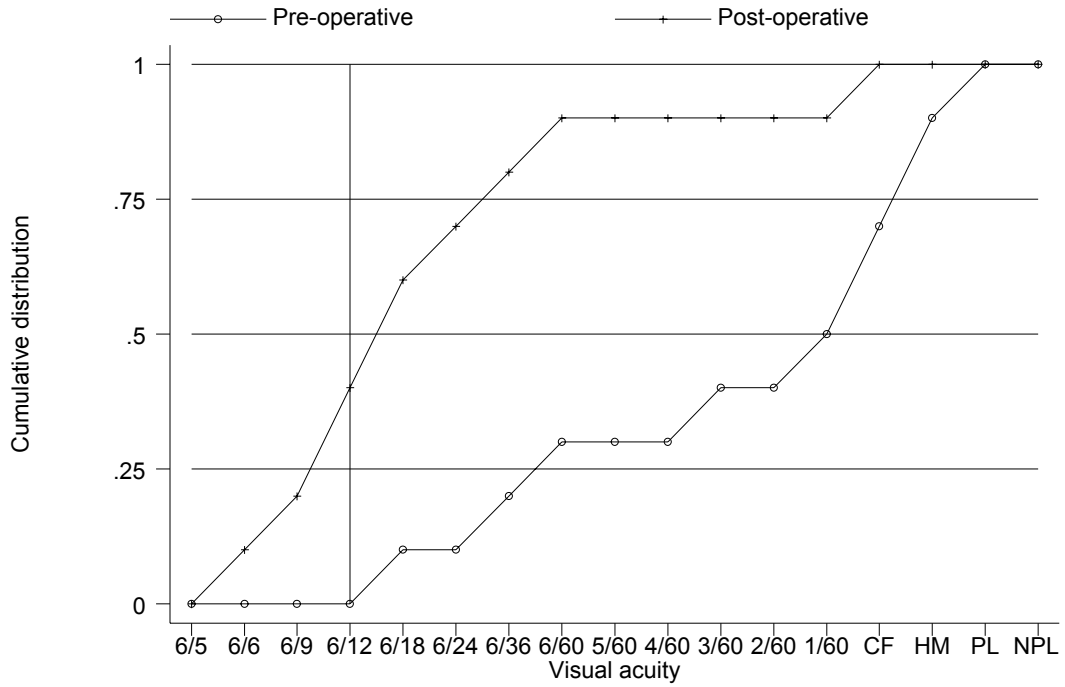


Figure 3.4.1.3: Cumulative distribution of visual acuity by pre- and post-operative refracted VA

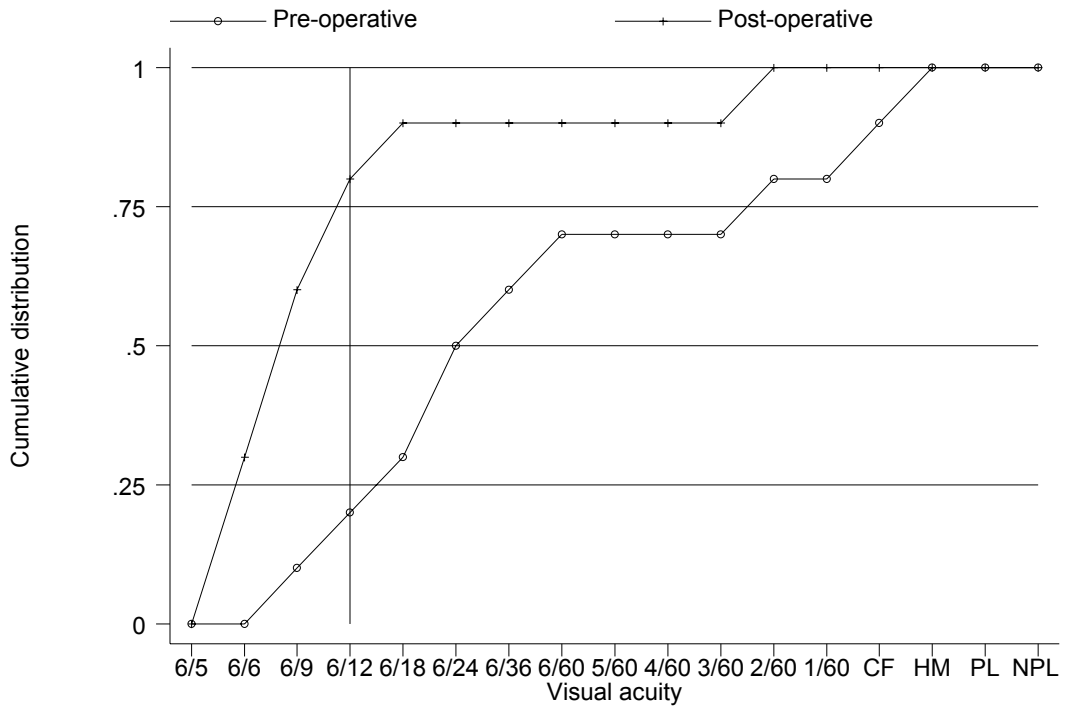
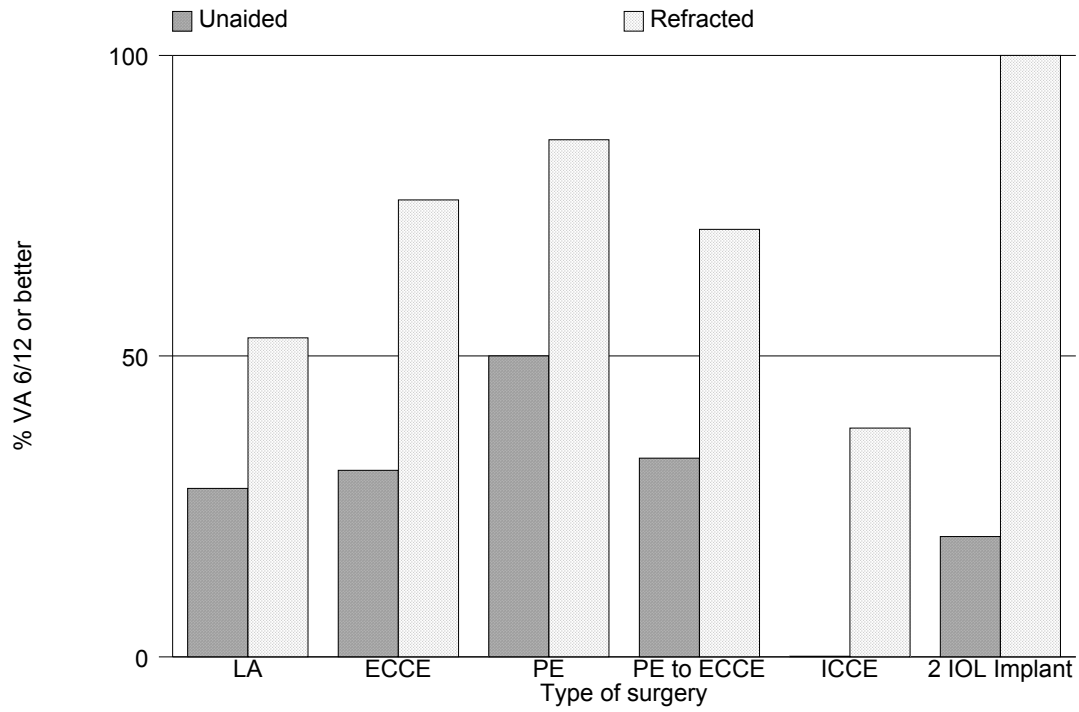


Table 3.4.2: Distribution of post-operative refracted VA 6/12 or better at the last follow up, by surgery

Type of surgery	Unaided			Refracted		
	N	VA 6/12 or better No.	%	N	VA 6/12 or better No.	%
All surgeries	2930	1115	38	2404	1901	79
Lens aspiration	86	24	28	62	33	53
ECCE	1639	512	31	1349	1030	76
PE	1102	552	50	905	778	86
PE to ECCE	75	25	33	63	45	71
ICCE	18	0	0	16	6	38
Secondary IOL Implant	10	2	20	9	9	100

Figure 3.4.2: Percent of patients with refracted VA 6/12 or better at the last follow up, by surgery



* LA= Lens aspiration

* 2 IOL Implant= Secondary IOL Implant

Table 3.4.3: Distribution of post-operative refracted VA 6/12 or better in relation to age and type of surgery

Factor	Types of cataract surgery																				
	All surgeries			Lens aspiration			ECCE			PE			PE to ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	2404	1901	79	62	33	53	1349	1030	76	905	778	86	63	45	71	16	6	38	9	9	100
Age group																					
<1 year	1	1	100	1	1	100	0	0		0	0		0	0		0	0		0	0	
1-14 years	22	13	59	20	11	55	1	1	100	0	0		0	0		0	0		1	1	100
15-24 years	21	11	52	14	6	43	5	4	80	0	0		0	0		1	0	0	1	1	100
25-34 years	24	17	71	13	9	69	6	5	83	5	3	60	0	0		0	0		0	0	
35-44 years	74	60	81	6	2	33	38	32	84	29	25	86	1	1	100	0	0		0	0	
45-54 years	253	207	82	6	3	50	134	111	83	98	82	84	11	9	82	3	1	33	1	1	100
55-64 years	654	556	85	0	0		356	293	82	274	248	91	17	10	59	5	3	60	2	2	100
65-74 years	937	735	78	1	1	100	544	401	74	358	308	86	26	20	77	4	1	25	4	4	100

Factor	Types of cataract surgery																				
	All surgeries			Lens aspiration			ECCE			PE			PE to ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
75-84 years	376	275	73	0	0		238	169	71	127	100	79	8	5	63	3	1	33	0	0	
>=85 years	42	26	62	1	0	0	27	14	52	14	12	86	0	0		0	0		0	0	

Table 3.4.4: Distribution of post-operative refracted VA 6/12 or better in relation to gender and type of surgery

Factor	Types of cataract surgery																				
	All surgeries			Lens aspiration			ECCE			PE			PE to ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	2404	1901	79	62	33	53	1349	1030	76	905	778	86	63	45	71	16	6	38	9	9	100
Gender																					
Male	1182	952	81	39	22	56	645	508	79	446	383	86	33	26	79	11	5	45	8	8	100
Female	1222	949	78	23	11	48	704	522	74	459	395	86	30	19	63	5	1	20	1	1	100

Table 3.4.5: Distribution of post-operative refracted VA 6/12 or better in relation to co-morbidity and type of surgery

Factor	Types of cataract surgery																				
	All surgeries			Lens aspiration			ECCE			PE			PE to ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	2404	1901	79	62	33	53	1349	1030	76	905	778	86	63	45	71	16	6	38	9	9	100
Co-morbidity																					
1. Ocular																					
Yes	651	430	66	23	7	30	369	233	63	231	174	75	11	8	73	13	4	31	4	4	100
No.	1753	1471	84	39	26	67	980	797	81	674	604	90	52	37	71	3	2	67	5	5	100
2. Systemic																					
Yes	1314	1042	79	4	2	50	728	560	77	531	449	85	42	26	62	7	3	43	2	2	100
No.	1090	859	79	58	31	53	621	470	76	374	329	88	21	19	90	9	3	33	7	7	100

Table 3.4.6: Distribution of post-operative refracted VA 6/12 or better in relation to complication and type of surgery

Factor	Types of cataract surgery																				
	All surgeries			Lens aspiration			ECCE			PE			PE to ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	2404	1901	79	62	33	53	1349	1030	76	905	778	86	63	45	71	16	6	38	9	9	100
Complication																					
1. Intra-op																					
Yes	271	178	66	10	5	50	139	84	60	83	63	76	33	22	67	6	4	67	0	0	
No.	2133	1723	81	52	28	54	1210	946	78	822	715	87	30	23	77	10	2	20	9	9	100
2. Post-op																					
Yes	348	215	62	13	5	38	220	134	61	96	68	71	12	5	42	4	0	0	3	3	100
No.	2056	1686	82	49	28	57	1129	896	79	809	710	88	51	40	78	12	6	50	6	6	100

Table 3.4.7: Distribution of post-operative refracted VA 6/12 or better in relation to nature of surgery and type of surgery

Factor	Types of cataract surgery																				
	All surgeries			Lens aspiration			ECCE			PE			PE to ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	2404	1901	79	62	33	53	1349	1030	76	905	778	86	63	45	71	16	6	38	9	9	100
Nature of surgeries																					
Emergency	28	15	54	7	2	29	11	6	55	8	6	75	0	0		2	1	50	0	0	
Elective	2376	1886	79	55	31	56	1338	1024	77	897	772	86	63	45	71	14	5	36	9	9	100

Table 3.4.8: Distribution of post-operative refracted VA 6/12 or better in relation to anaesthesia and type of surgery

Factor	Types of cataract surgery																				
	All surgeries			Lens aspiration			ECCE			PE			PE to ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	2404	1901	79	62	33	53	1349	1030	76	905	778	86	63	45	71	16	6	38	9	9	100
Anaesthesia																					
1. Anaesthesia																					
General	135	82	61	49	27	55	46	32	70	27	17	63	5	1	20	4	1	25	4	4	100
Local	2269	1819	80	13	6	46	1303	998	77	878	761	87	58	44	76	12	5	42	5	5	100
2. Local anaesthesia																					
Retrobulbar	656	525	80	2	0	0	382	292	76	250	216	86	13	11	85	4	1	25	5	5	100
Peribulbar	422	331	78	1	1	100	262	198	76	142	121	85	12	9	75	5	2	40	0	0	
Subtenon	1115	893	80	8	4	50	693	538	78	378	326	86	32	23	72	4	2	50	0	0	
Subconjunctival	6	4	67	0	0		4	2	50	2	2	100	0	0		0	0		0	0	
Facial block	276	220	80	0	0		177	135	76	94	82	87	3	1	33	0	0		2	2	100
Topical	164	142	87	3	1	33	8	3	38	150	135	90	3	3	100	0	0		0	0	
Other	1	1	100	0	0		1	1	100	0	0		0	0		0	0		0	0	

Factor	Types of cataract surgery																				
	All surgeries			Lens aspiration			ECCE			PE			PE to ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
3. Sedation																					
Any	1012	819	81	4	1	25	663	530	80	313	265	85	25	19	76	5	2	40	2	2	100
None	1392	1082	78	58	32	55	686	500	73	592	513	87	38	26	68	11	4	36	7	7	100

Table 3.4.9: Distribution of post-operative refracted VA 6/12 or better in relation to combined surgery and type of surgery

Factor	Types of cataract surgery																				
	All surgeries			Lens aspiration			ECCE			PE			PE to ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	2404	1901	79	62	33	53	1349	1030	76	905	778	86	63	45	71	16	6	38	9	9	100
Combined surgery																					
Any	86	54	63	6	2	33	40	23	57	31	26	84	2	1	50	7	2	29	0	0	
None	2318	1847	80	56	31	55	1309	1007	77	874	752	86	61	44	72	9	4	44	9	9	100

Table 3.4.10: Distribution of post-operative refracted VA 6/12 or better in relation to IOL and type of surgery

Factor	Types of cataract surgery																				
	All surgeries			Lens aspiration			ECCE			PE			PE to ECCE			ICCE			Secondary IOL Implant		
	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%	N	No.	%
N	2404	1901	79	62	33	53	1349	1030	76	905	778	86	63	45	71	16	6	38	9	9	100
IOL																					
1. IOL																					
With IOL	2349	1891	81	52	30	58	1319	1024	78	900	778	86	61	45	74	8	5	63	9	9	100
Without IOL	55	10	18	10	3	30	30	6	20	5	0	0	2	0	0	8	1	13	0	0	
N	2349	1891	81	52	30	58	1319	1024	78	900	778	86	61	45	74	8	5	63	9	9	100
2. IOL-type																					
Foldable	562	487	87	12	8	67	44	31	70	499	442	89	7	6	86	0	0		0	0	
Non-foldable	1787	1404	79	40	22	55	1275	993	78	401	336	84	54	39	72	8	5	63	9	9	100
3. IOL-material																					
PMMA	1827	1434	78	40	22	55	1290	1001	78	426	358	84	55	40	73	8	5	63	8	8	100
Silicone	287	252	88	4	3	75	16	12	75	264	234	89	2	2	100	0	0		1	1	100
Acrylic	234	204	87	8	5	63	13	11	85	209	185	89	4	3	75	0	0		0	0	
Other	1	1	100	0	0		0	0		1	1	100	0	0		0	0		0	0	

3.5 Post- operative refracted VA improved by one or more line of Snellen chart

Table 3.5.1: Distribution of post- operative refracted VA improved by one or more line of Snellen chart, at the last follow up

Type of surgery	Refracted Visual Acuity						
	N	No change		Worse		Improved	
		No.	%	No.	%	No.	%
All surgeries	225	11	5	10	4	204	91
Lens aspiration	7	0	0	1	14	6	86
ECCE	86	3	3	3	3	80	93
PE	120	7	6	4	3	109	91
PE to ECCE	9	1	11	2	22	6	67
ICCE	1	0	0	0	0	1	100
Secondary IOL	2	0	0	0	0	2	100
Implant							

Table 3.5.2: Distribution of post- operative refracted VA improved by one or more line of Snellen chart, with and without ocular co-morbidity at the last follow up

Ocular co-morbidity			Type of surgery						
			All surgeries	Lens aspiration	ECCE	PE	PE to ECCE	ICCE	Secondary IOL Implant
Yes	N		48	0	22	23	1	1	1
	No change	No.	2	0	1	1	0	0	0
		%	4		5	4	0	0	0
	Worse	No.	4	0	3	1	0	0	0
		%	8		14	4	0	0	0
	Improved	No.	42	0	18	21	1	1	1
		%	88		82	91	100	100	100
	No.	N		177	7	64	97	8	0
No change		No.	9	0	2	6	1	0	0
		%	5	0	3	6	13		0
Worse		No.	6	1	0	3	2	0	0
		%	3	14	0	3	25		0
Improved		No.	162	6	62	88	5	0	1
		%	92	86	97	91	63		100

Table 3.5.3: Distribution of post-operative refracted VA improved by one or more line of Snellen chart with intra-op complication and without intra-op complication, at the last follow up

Intra-op complication	Refracted VA	Type of surgery							
		All surgeries	Lens aspiration	ECCE	PE	PE to ECCE	ICCE	Secondary IOL Implant	
Yes	N	31	0	10	13	7	1	0	
	No change	No.	1	0	0	0	1	0	0
		%	3		0	0	14	0	
	Worse	No.	4	0	1	1	2	0	0
		%	13		10	8	29	0	
	Improved	No.	26	0	9	12	4	1	0
%		84		90	92	57	100		
No.	N	194	7	76	107	2	0	2	
	No change	No.	10	0	3	7	0	0	0
		%	5	0	4	7	0		0
	Worse	No.	6	1	2	3	0	0	0
		%	3	14	3	3	0		0
	Improved	No.	178	6	71	97	2	0	2
%		92	86	93	91	100		100	

Table 3.5.4: Distribution of post-operative refracted VA improved by one or more line of Snellen chart with systemic co-morbidity and without systemic co-morbidity, at the last follow up

Systemic co-morbidity	Refracted VA		Type of surgery						
			All surgeries	Lens aspiration	ECCE	PE	PE to ECCE	ICCE	Secondary IOL Implant
Yes	N		139	0	56	76	6	1	0
	No change	No.	6	0	1	4	1	0	0
		%	4		2	5	17	0	
	Worse	No.	7	0	3	3	1	0	0
		%	5		5	4	17	0	
	Improved	No.	126	0	52	69	4	1	0
	%	91		93	91	67	100		
No.	N		86	7	30	44	3	0	2
	No change	No.	5	0	2	3	0	0	0
		%	6	0	7	7	0		0
	Worse	No.	3	1	0	1	1	0	0
		%	3	14	0	2	33		0
	Improved	No.	78	6	28	40	2	0	2
	%	91	86	93	91	67		100	

3.6 Factors contributing to post-operative refracted VA of worse than 6/12

Table 3.6.1: Distribution of factors contributing to post- operative refracted VA of worse than 6/12

Factor	No.	%
N	503	100
Patients with any factor	380	76
Patients with specific factor		
1.High astigmatism	98	19
2.Posterior capsular opacity	55	11
3.Cystoid macular oedema	21	4
4.Endophthalmitis	3	1
5.Corneal decompensation	16	3
6.Decentered IOL	7	1
7.Retinal detachment	7	1
8.Preexisting ocular co-morbidity	169	34
9.Other	64	13