The causes of patients failing pre-operative cataract surgery assessment

Lee Hsin Yi[1,2], Norlina Mohd Ramli[2], Fiona Chew Lee Min[1]

[1]*Department of Ophthalmology, Hospital Selayang, Selangor. Kementerian Kesihatan Malaysia*
[2]*Department of Ophthalmology, University Malaya, Kuala Lumpur*

Background: To report the incidence and identify causes of postponement during pre-operative cataract surgery assessment in Hospital Selayang.
Methods: This is a retrospective study, which examined the number of visits to Eye Clinic, Hospital Selayang for pre-operative cataract surgery assessment every Thursday from November 2016 to October 2017. We analysed the total amount of patients, the amount of defaulters and reasons for failing pre-operative assessments resulting in multiple visits to the clinic.
Results: A total of 811 appointments were scheduled for pre-operative cataract surgery assessment during the analysed period. There were 146 defaulters (18.0%), 410 who passed the pre-operative assessment (50.5%) and 255 who failed and required more than 1 visit for further investigations (31.4%). The main reasons for patients failing pre-operative assessment were uncontrolled hypertension (35.8%), cardiac diseases (26.0%), ocular infections (16.7%) and uncontrolled diabetes mellitus (13.9%). Others factors include severe dry eyes, systemic infections and patient personal factors. There were 17 cases where patients had overlapping causes for postponement.
Conclusion: Nearly a third of cases listed for cataract surgery fail their pre-operative assessment. Apart from defaulters, uncontrolled medical conditions account for the majority of postponement of cataract cases. This highlights the importance of pre-operative assessment in elective surgery among the Malaysian population.
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Introduction:

It is estimated that 1.3 billion people worldwide live with some form of vision impairment and up to 36 million are considered blind[1]. Cataract is the leading cause of blindness in the world[2]. Majority of this population are aged 50 years and above.

Similarly in Malaysia, based on the National Eye Survey (NES) 2014 population, cataract is the main cause of blindness (58%) and low vision (68%) in Malaysia[3]. The mean age of patients at the time of cataract surgery was 65.9 and 75.6% of patients had systemic co-morbidity. The most common systemic co-morbidity were hypertension (62.2%) and diabetes mellitus (44.2%)[4]. Likewise, a study conducted in India also noted hypertension and diabetes mellitus were the most common systemic co-morbidity in patients undergoing cataract surgery[5].

Being visually impaired not only affects quality of life but also carries a significant impact on society. It will become a financial

Correspondence to:
Lee Hsin Yi, *Department of Ophthalmology, Hospital Selayang, Selangor. Kementerian Kesihatan Malaysia*
E-mail: adrianne0786@gmail.com
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burden on the economy as well due to the loss of productivity and increased medical expenses[6]. However, nearly 80% of all vision impairment globally is considered avoidable[1,7].

Cataract surgery is associated with improvements in quality of life, visual acuity, contrast sensitivity, depth perception, activity, anxiety, depression, confidence and reduction in falls[8]. Since most cataract surgeries are performed on older individuals with correspondingly high systemic comorbidities, preoperative evaluation is routinely done to identify difficult and high-risk cases to manage them appropriately.

However, repeated visits to the clinic for pre-operative assessment causes much distress for the patient and increases the burden on already stretched services. Furthermore, it also carries significant financial implications. A routine pre-operative assessment in our centre includes a consultation with the medical officer who examines the patient and explains regarding the surgery including the risks involved, followed by a counselling session with a nurse regarding pre and post-operative care.

Previous studies looked into the causes of postponement in cataract surgery but not during pre-operative assessment. The purpose of this study is to report the incidence and causes of postponement during pre-operative cataract surgery assessment in a tertiary referral hospital in Kuala Lumpur.

Methods:

This is a retrospective study. Data was obtained from the electronic medical records of patients attending pre-operative assessment for cataract surgery every Thursday from November 2016 to October 2017 in Selayang Hospital. Pre-operative surgery assessments scheduled on other days are mainly non-cataract cases. Only patients who were scheduled for cataract surgery under local anaesthesia were included in this study. Patients who were scheduled for cataract surgery under general anaesthesia or other ocular surgeries besides cataract surgery were excluded from this study.

Patients' age, gender, visual acuity (VA) at time of review and systemic comorbidities were recorded

Based on the International Classification of Diseases 11 (2018) distance vision impairment is classified as[1]:

- Mild – presenting visual acuity worse than 6/12
- Moderate – presenting visual acuity worse than 6/18
- Severe – presenting visual acuity worse than 6/60
- Blindness – presenting visual acuity worse than 3/60

Causes of postponement were divided as shown below:

A. Uncontrolled Diabetes Mellitus (Type I and Type II): Dextrose stick test >10 mmol/L

B. Uncontrolled Hypertension: BP > 150/80 mmHg

C. Cardiac diseases: Recent cardiovascular event within past 6 months or cardiac surgery. Underlying cardiac condition with no prior assessment by cardiology team.

D. Evidence of renal impairment on baseline blood tests with fluid overload symptoms.

E. Presence of active ocular infections: Conjunctivitis, keratitis, blepharitis, meibomitis

F. Others: Severe dry eyes, Systemic infections (such as upper respiratory tract infections, urinary tract infections, cellulitis), patient personal factors (financial issues, undecided, change of mind, refusal for surgery)

Results:

A total of 811 appointments were scheduled for pre-operative cataract surgery assessment during the analysed period. There were 146 defaulters (18.0%), 410 who passed the pre-operative assessment (50.5%) and 255 who failed and required more than 1 visit for further investigations (31.4%). 173 patients made up for the 255 appointments where the patient failed pre-operative assessment.

Regarding demographics, of the 173 patients who failed pre-operative assessment, 96 were females (55.5%) and 77 were males (44.5%) with 95.9% above 50 years old. The following Chart 1 and Chart 2 show the breakdown of age group and pre-operative VA of patients respectively.

The main reasons for patients failing pre-operative assessment are listed on Table 1. In the category 'Others', the majority was due to systemic infections. There were 17 cases where patients had overlapping causes for

postponement.

The duration in between visits ranged from 1-2 months. This resulted in an extra 82 clinic visits in total. Chart 3 shows the number of patients with the amount of times they were postponed.

Table 1 Causes of postponement during pre-operative cataract assessment

Causes	No. of Patients
Uncontrolled Hypertension	62
Cardiac diseases	45
Ocular infections	29
Others	29
Uncontrolled Diabetes Mellitus	24
Renal impairment with fluid overload symptoms	2

Discussion:

The number of cataract surgeries performed has been steadily increasing throughout the years with a total of 44534 cataract surgeries performed at Ministry of Health(MOH) Hospitals in Malaysia in 2015[4]. Furthermore, this number is predicted to increase in the coming years which are attributable to population growth and aging[7]. Primary healthcare clinics play an important role in detecting patients with cataract and promptly referring them to tertiary centres to receive treatment. With the rising healthcare cost, it is vital to identify and take necessary measures to avoid wastage, improve services, and drive continuous improvement in the management of actions.

Studies have shown that pre-operative assessment clinics reduce elective case cancellations[9,10]. Although regional anaesthesia may have both ocular and systemic complications, with proper identification of predisposing factors, most are avoidable[11].

From our study, the main causes for patients failing pre-operative assessment are due to their clinical conditions which were uncontrolled hypertension, cardiac diseases, and uncontrolled diabetes mellitus. This corresponds with data in the cataract surgery registry which noted that hypertension (61.3%), diabetes mellitus (44.4%) and ischemic heart disease (8.1%) were the most common systemic co-morbidity encountered in patients presenting for cataract surgery[4]. Previous National Health and Morbidity Surveys (NHMSs) carried out in 2006, 2011 and 2015 also show a worrying trend of increasing overweight and obesity prevalence among Malaysian adults[12,13].

Based on the recent NICE guidelines, hypertension plays an important role as a preventable cause of premature morbidity and mortality[14]. A blood pressure threshold of systolic 180 mm Hg and diastolic 110 mm Hg is considered harmful and is associated with target organ damage[15]. Although evidence regarding the effect of raised pre-operative blood pressure is limited, the risk of developing adverse medical events should not be taken lightly. Cardiovascular conditions, if not well optimized, can have serious implications during surgery due to reaction to stress and positioning. Patients under stress during surgery may develop ischaemic ECG changes and experience angina[11].

Patients with diabetes mellitus have altered immunity. In hyperglycemic state, increased apoptosis of polymorphonuclear leukocytes and decreased mobilization, chemotaxis, and phagocytic activity may occur[16]. Therefore, impairment of the cellular innate immunity will put diabetic patients at a higher risk of developing infections. Based on a study by Lecube et al. the extent of impairment of phagocytosis in patients with diabetes mellitus is directly related to glycemic control. With persistently poor diabetic control, affected individuals are predisposed to an increased incidence and severity of infection[17,18]. Hence, it is of utmost importance to keep their systemic blood glucose levels at an optimum level.

Besides systemic co-morbidities, this study showed that ocular infections accounts as one of the main factors for patients failing their pre-operative assessment. Patients with

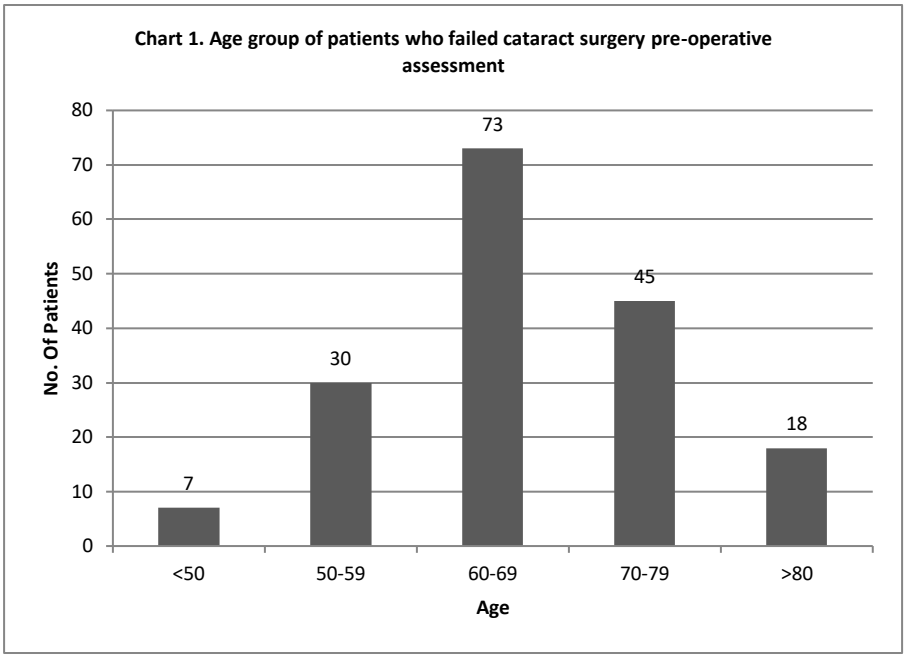


Chart 1. Age group of patients who failed cataract surgery pre-operative assessment
No. Of Patients
80
70
60
50
40
30
20
10
0
7
30
73
45
18
<50
50-59
60-69
70-79
>80
Age

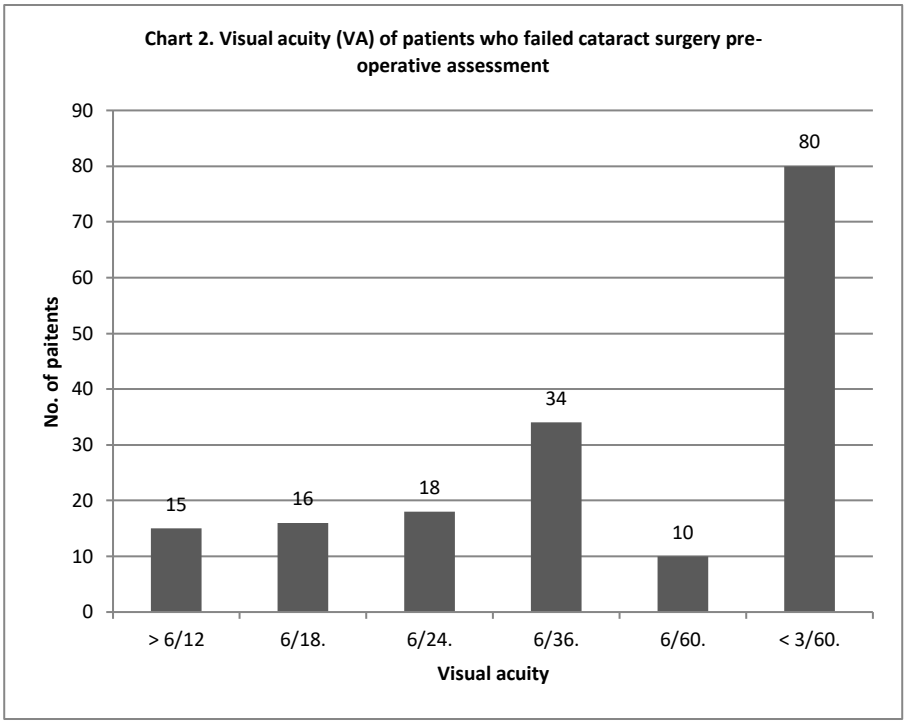
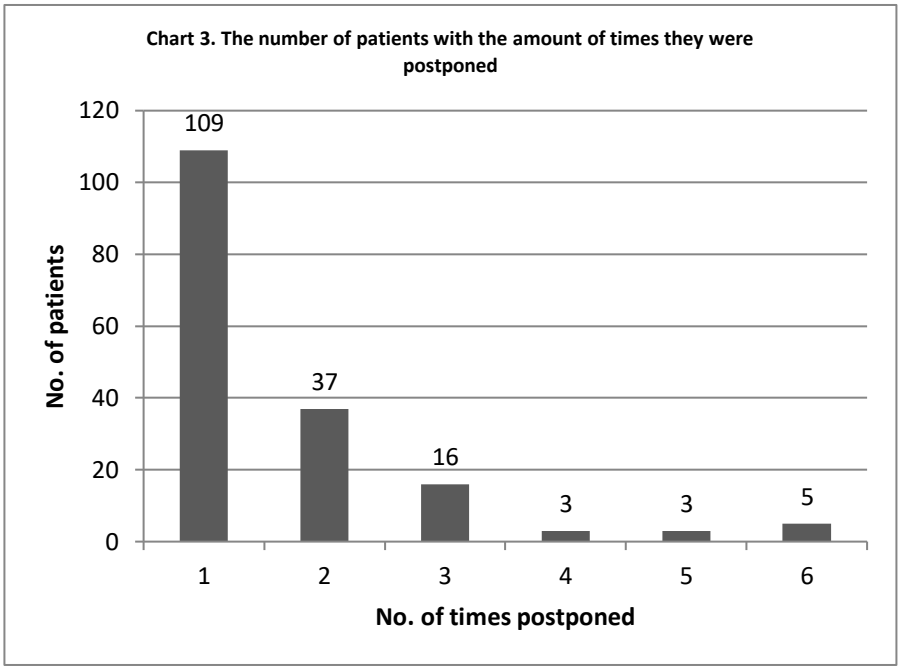


Chart 2. Visual acuity (VA) of patients who failed cataract surgery pre-operative assessment
No. of paitents
90
80
70
60
50
40
30
20
10
0
15
16
18
34
10
80
> 6/12
6/18.
6/24.
6/36.
6/60.
< 3/60.
Visual acuity



blepharitis may potentially face multiple issues such as irritated eyes, longer duration of inflammation, poorer visual acuity on the first postoperative day, and most dreaded of all, risk of postoperative endophthalmitis[19]. It is therefore essential to counsel patients on proper lid hygiene techniques as a simple practice can easily prevent a multitude of problems. A study conducted on the cancellation rates for cataract surgery due to blepharitis noted a significant decrease in cancellation rates once the patients were counselled about lid hygiene[20].

To ensure the primary goals of preoperative evaluation are achieved requires proper planning. Understanding aetiologies of patients failing pre-operative assessments is paramount to implementing systems-based strategies to prevent case attrition, patient inconvenience and maximize cost-effectiveness[10]. Patient education is equally important. They should be made aware of their own systemic diseases or bring their medical records during every clinic appointment to facilitate in decision making, as one reading of high BP or dextrose stick test might not reflect their actual long term control. Besides that, counselling regarding proper technique of lid hygiene is essential both pre and post-operatively.

A possible solution to reduce the number of times patients need to come for pre-operative assessment would be to liaise with the medical team for patients with poorly optimized systemic conditions to be reviewed early or on the same day as their ophthalmology clinic appointment. However, if optimization as an outpatient fails after multiple visits, admission for proper monitoring and co-management with other respective teams can be considered to reduce the time to surgery.

This study was done retrospectively in a single centre. Future prospective studies that include multiple centres can be conducted which assesses patients' education level and occupation as well to determine if it plays a role in the rate of defaulters and factors of postponement.

Conclusion:

The main causes for patients failing pre-operative assessment are due to their clinical conditions which were uncontrolled hypertension, cardiac diseases, and uncontrolled diabetes mellitus as well as ocular infections. In the category 'Others', the majority was due to systemic infections such as upper respiratory tract infections and cellulitis.

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