

# Comparing patient satisfaction, outcomes and costs between cataract day surgery and inpatient surgery for elderly people

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## Abstract

*The study reported in this paper examined the characteristics of elderly people undergoing cataract surgery and compared patient perspectives and satisfaction, outcome, costs, reported health problems and social circumstances of day surgery patients and hospital inpatients. The study sample was drawn from the client database of a health insurance fund and covered 291 people aged 60 years or more who had recently undergone cataract surgery.*

*Overall, both day surgery patients and inpatients indicated a high level of satisfaction with their eye surgery (about 80 per cent for both groups). The majority of patients from both groups reported an improved level of vision, with vision outcome in the day surgery group being as good as in the inpatient group. Overall, inpatient treatment was more costly and involved higher out of pocket expenses.*

*The study results indicate a potential to increase the number of patients undergoing cataract surgery as a day patient procedure. Pre-operative preparation contributed to patient satisfaction and the availability of family and/or social support was an important factor influencing day surgery admission. Whilst patients reporting health problems were less inclined to have cataract surgery than were day patients, this only accounted for one-fifth of the total inpatient group. Developing systematic and appropriate case selection criteria and effective case management will contribute to more efficient use of hospital resources, an increased use of day surgery facilities, and hence a more cost-effective overall cataract surgery service for elderly people.*

## Introduction

As people become older, the incidence of chronic degenerative diseases increases. Age-related cataract is one of the frequent physical problems that develop with age and is a common cause of poor vision in older persons. Ferguson et al. (1991) report an increase in the number of cataract procedures averaging nearly 5 per cent per year in the United States between 1975 and 1985. An increasing frequency of surgery for cataract in Australia can be assumed, although there are no published national statistics.

In the United States there has been a major change in the way cataract surgery is performed. Whereas in 1980 approximately 85 per cent of such surgery was undertaken on hospital inpatients, by 1986 the reverse was true, with over 80 per cent of all patients undergoing cataract surgery estimated to have had their operation as an outpatient (Severin 1986). As a result of technical advances, cataract surgery has become such an intrinsically reliable procedure that surgery can now typically be performed safely on outpatients, whilst maintaining the excellent results of visual acuity and low complication rates that are achieved with conventional inpatient surgery (Davies, Limacher & Powell 1987; Lowe et al. 1991; Davies & Tyers 1992; Holland et al. 1992).

Whilst previous research has examined factors such as medical techniques, unanticipated hospital admission, complications and costs related to the outcomes of cataract surgery, little has been written about patient perceptions, satisfaction or family/community support (Osborne & Rudkin 1993). This study examined the following research questions regarding cataract surgery for elderly people.

1. What is the role or influence of health professionals on the choice between day surgery and inpatient surgery?
2. Are there differences between the type of patients who receive day surgery or inpatient surgery?
3. How does the care received and costs differ between being a day patient or an inpatient?
4. What is the different effect on, and role of, family/community support between day surgery and inpatient surgery?
5. What is the relationship between patient satisfaction and the type of surgery?

Many procedural situations (not only for cataracts) involve the assessment of patient satisfaction, outcomes and cost in relation to the balance between day and inpatient treatment. Hence, the issues explored in this paper can be generalised beyond cataract surgery.

## Method

The cases for this study were selected from those clients of a health insurance company in Western Australia having cataract surgery between May and July 1995 and aged over 60. During this data collection period, a total of 416 clients qualified for inclusion, of whom 385 were able to be contacted. Two hundred and ninety-one people participated in the final sample (120 day surgery patients and 171 inpatients), representing a response rate of 76 per cent.

The research conducted by O'Connor (1991), assessing patient satisfaction with day surgery units, provided a questionnaire design framework and the Barthel Index provided a list of daily living activities which was modified for use in this study. The final questionnaire adopted (in large print for ease of reading for elderly people with possible vision problems) contained 26 questions, covering both open and closed responses.

The study used a self-report approach which, whilst obviously appropriate for areas such as patient satisfaction, is less so for such areas as 'health problems'. However, this approach was considered to be the most cost-effective.

Following input from a variety of health professionals, piloting took place over two stages, covering eight clients and including telephone contact to clarify a number of issues. Participation in the study was voluntary, with all patients being informed about the purpose of the research and their written consent obtained. Patients were mailed the questionnaire and given a phone number to contact if they had any questions. Finally, to permit a degree of cost comparison, readily available cost data were obtained from the private health insurance company which assisted in the study.

Initial data analyses consisted of frequency distributions for both close-ended and (coded) open-ended questions, with inferential statistics such as the chi-square test and t-tests being used to explore the research questions listed above. A significance level of 0.05 was adopted.

## Results

Of the 291 respondents, 63 per cent were females and the average age was 75. Table 1 illustrates the age structure of respondents. There was no significant difference in gender ( $X^2 = 2.54$ ,  $p = 0.111$ ) or age distribution ( $X^2 = 4.64$ ,  $p = 0.462$ ) between the day surgery patient and inpatient groups.

**Table 1: Age structure of respondents**

Age group	Percentage
60–64	7
65–69	21
70–74	23
75–79	21
80–84	18
85+	10
<b>Total</b>	<b>100</b>

### Information

All but 2 per cent of cases received information from someone about their eye operation, often from more than one source (40 per cent). Eye specialists were the major information providers for both groups (day surgery patients and inpatients), although as many as 40 per cent did not receive information about the cost of their surgery. The pre-admission clinic was the only information provider which had a statistically different association with the two groups ( $X^2 = 10.85$ ,  $p = 0.001$ ), cases in the day surgery group being more likely (15 per cent) to receive information from this source than inpatients (4 per cent). Eighteen per cent of respondents wanted more information of one kind or another, mostly (8 per cent day surgery patients and 15 per cent inpatients) about their post-operative care. Only 4 per cent expressed any dissatisfaction with the information they received.

### Health problems

It was not feasible within the scope of this study to directly assess the health problems of participants; hence a self-report approach was used, as already indicated. About 22 per cent of respondents indicated that they had health problems which had influenced their choice of surgery. Inpatients were significantly more likely (31 per cent) than day surgery patients (13 per cent) to have reported health problems which had influenced their choice ( $X^2 = 11.63$ ,  $p = 0.0001$ ). The major health problem mentioned by both groups was circulatory disease.

## Choice

Most respondents (69 per cent) were offered a choice of either staying overnight in hospital or undertaking day surgery. The reasons given for the choice of surgery were significantly different for the two groups. Those opting to be day surgery patients were more likely to indicate a 'personal decision' reason ( $p = 0.000$ ), whereas the choice of being an inpatient was more likely to be because of a particular health situation ( $p = 0.001$ ) or family/social concern ( $p = 0.000$ ). However, as stated above, only 31 per cent of inpatients reported having any relevant health problems.

## Admission and discharge

About 90 per cent of day surgery patients came into hospital (or surgery centre) on the morning of their operation, although 40 per cent had their eye surgery in the afternoon. In the inpatient group, 56 per cent stayed two or more nights in hospital. Excluding those who had a (self-reported) health problem, about 45 per cent of inpatients were admitted the night before their operation and were discharged the following day. Amongst this group, around 65 per cent stayed with their family before, and nearly 90 per cent after, their eye operation. In 74 per cent of cases transportation was not a problem.

## Treatment aspects

Overall, 61 per cent of patients received a local rather than a general anaesthetic, this being significantly higher amongst the day surgery group (83 per cent) compared with the inpatient group (45 per cent) ( $X^2 = 41.10$ ,  $p = 0.000$ ). Whilst older patients were more likely to receive a local rather than a general anaesthetic, there was no significant association between those reporting health problems and type of anaesthetic.

More than a third of cases experienced some discomfort after their operation, this being similar for inpatients (39 per cent) and for day surgery patients (33 per cent). Whilst inpatients were more likely to experience discomfort in hospital ( $X^2 = 13.21$ ,  $p = 0.001$ ), there was no significant difference between the two groups regarding discomfort at home, nor according to the type of anaesthetic.

About a third of cases had a problem with transport, as one would expect this being more often the case, but not significantly so, for inpatients (35 per cent) than for day surgery patients (27 per cent) ( $X^2 = 3.59$ ,  $p = 0.058$ ).

## Help at home

There was no significant difference between the two groups in living arrangements before eye surgery. However, patients in the day surgery group were more likely to go home to family or to stay with family after their operation ( $X^2 = 22.41$ ,  $p = 0.000$ ). This finding is obviously influenced by the day surgery policy, which requires families or friends to care for a day surgery patient for at least the first post-operative night.

Only about a quarter of cases received help with their daily activities for as much as the first three days after surgery, with inpatients more likely to receive this extent of help than day surgery patients ( $X^2 = 7.03$ ,  $p = 0.030$ ). The extent of help received did not differ significantly between the two groups when those having (self-reported) health problems were excluded. For 8 per cent of cases, help had been provided from someone who had taken time off work or given up their usual activities to care for them. There was no significant relationship between this latter occurrence and the type of surgery.

## Post-operation and recovery

Nearly all respondents (97 per cent for day surgery patients and 95 per cent for inpatients) stated that they had experienced an improvement in their vision since their operation. The recovery time (that is, the time it took before they felt back to normal) was one week for three-quarters of respondents. Only 10 per cent said that they needed more than three weeks to recover. Patients in the day surgery group were more likely to take a shorter time to recover ( $X^2 = 5.84$ ,  $p = 0.054$ ), whilst the type of anaesthesia was not shown to influence recovery time.

## Satisfaction

Approximately 80 per cent of respondents were satisfied or very satisfied with all aspects of their care. Interestingly, those patients offered a *choice* between being admitted as a day surgery patient or an inpatient had a higher level of satisfaction with their whole experience of surgery ( $X^2 = 8.19$ ,  $p = 0.004$ ). Only about 6 per cent stated that they were at all dissatisfied with any aspect. There was no significant difference between the two groups regarding the level of patient satisfaction, either with their whole experience or specific treatment components.

For the great majority (92 per cent), their operation had turned out to be less uncomfortable and worrying than they had expected, or about the same – this being similar for day surgery patients and inpatients. When asked what they would recommend to a friend or relative considering eye surgery, respondents overwhelmingly mentioned the type of surgery they themselves had experienced,

with only 7 per cent recommending otherwise. 'Personal concern' (mainly to do with feeling comfortable and relaxed) was most often given as the major reason for choosing either day surgery or inpatient surgery, whereas 'having home support' was a more important reason given for recommending day surgery and 'care issues' for inpatient surgery. Cost was not a major concern for either group.

## **Cost**

The 'total cost' identified in the study includes client payment, Medicare payment and the private health insurance payment. For patients having one eye operation only (nine patients had two during the period of the survey), the average total cost for a day surgery patient was \$1974 and \$2310 for an inpatient; these figures are significantly different ( $X^2 = 11.40$ ,  $p = 0.003$ ). Also significantly different between groups was the client payment, being \$90 on average for a day surgery patient and \$106 for an inpatient. Of some interest is the fact that over half (51 per cent) of the day surgery patients made no payment at all, whereas the figure for inpatients was only 20 per cent.

Comparing costs for the survey respondents against those for non-respondents (available from the health insurance company database) revealed no significant difference for either the day surgery group or the inpatient group. This would tend to indicate that there is little, if any, bias in the results because of non-response.

## **Discussion**

### **Factors influencing type of surgery received**

#### ***Health***

Approximately one in five patients had self-reported health problems and these patients were more likely to be managed as inpatients. The same emphasis was also found in such previous studies as Holland et al. (1992), Lumme and Laatikainen (1994) and Ninn-Pederson and Stenevi (1995). Hospitalisation is a better alternative than day surgery for those who have poor general health. Inpatient care can ensure the stability of a patient's health, facilitate health professionals in assessing and preparing a patient for surgery and also allow more time for monitoring after surgery to ensure a patient's health condition is stable.

Hospitalisation is also more suitable for patients with dementia or anxiety. Dementia patients may have difficulty in cooperating during the eye surgery

process and anxious people may need more time to settle down and become familiar with the hospital environment (Fenton-Lee, Coke & Riach 1994).

So, whilst it might be expected that those with health problems would have their surgery as inpatients, the fact that 70 per cent of inpatients in the study did not report any health problems raises the question of whether staying one or more nights in hospital for their cataract surgery was really necessary, or even desirable, for many of these people. Further investigation would be required, relating to other possible mitigating factors, before definite conclusions could be made regarding this issue.

### ***Information***

Most patients considered that the information they received about cataract surgery was adequate, although some areas of perceived deficiency were identified, including details about post-operative care, the operation itself and pre-operative preparation. Generally, day surgery patients require less of such information, as they usually have to attend for assessment before surgery, where staff explain the whole process and introduce them to the environment.

Green (1980) emphasised that knowledge is an important determinant of health care beliefs and practices. Hence any deficiency as regards key information being provided to patients regarding cataract surgery, as found in such previous studies as Read (1990), O'Connor, Gibberd and West (1991), Allen and Oberle (1993) and Ghosh and Sallam (1994), is of some concern.

### ***Availability of transport***

Having transport readily available is an important factor related to the type of surgery received. Day surgery patients need someone to drive them to the hospital or surgery centre and for the follow-up visit after surgery. Usually hospital transport is limited and cannot be made available for all patients, so that it is difficult to perform cataract surgery on a day basis without personal transport being available.

Distance is another related factor. For patients who live far away from hospital, an inpatient stay is likely to be more convenient. In other studies it has been found that cataract patients were required to arrange their own transport to hospital if they would like to have day surgery (Davies, Limacher & Powell 1987; Lowe et al. 1991; Davies & Tyers 1992).



***Help received and available***

Help in daily living activities was more available for day surgery patients, nearly all of whom went home and stayed with families, even though some of them lived alone before surgery. Help available, whether actually received or not, is an important factor. Because cataract surgery is not physically disabling, most patients can manage their daily living activities themselves after surgery. However, people's company can give patients confidence and make them feel safer in taking care of themselves.

Inpatients received more help than day surgery patients during the whole surgery experience, both in terms of level and type. However, when those who had a reported health problem were excluded, there was no significant difference in the help received between day surgery patients and inpatients.

**Care provided*****Anaesthetic***

Compared with inpatient cataract surgery, twice as much day surgery was performed under local rather than general anaesthetic. Strong et al. (1991) also found that cataract surgery is typically performed under local anaesthetic. One benefit of local anaesthetic is that it provides a reduction in the chance of complications related to general anaesthetic and allows earlier mobilisation. Because of this, its use makes cataract surgery eminently suitable as a day case procedure. Patient preferences also influence the use of anaesthesia. In the study, some patients indicated that they felt relaxed under local anaesthesia, whereas more anxious patients more often indicated that they did not want to know what was going on, or could not stand the injection, so that they preferred general anaesthetic. Luff and Elkington (1992) also argued that local anaesthetic requires patients with a higher tolerance, both mentally and physically.

A study by Sindhu et al. (1991) indicated that local anaesthetic use in day cataract surgery was greater in private hospitals than in public hospitals. In our study, all the patients had their operation in private hospitals and hence we are unable to make any such comparisons. However, we did find that local anaesthetic can provide safe operative conditions even when patients are more than 75 years old. One needs to ask, therefore, why so many patients under 75 years had cataract surgery under general anaesthetic when local anaesthetic can provide safer operative conditions, be less uncomfortable and reduce the risk of complications.

### ***Case management***

The issue of case management in inpatient cataract surgery emerged as important in this study. There are at least two groups of inpatients who appear to have high potential for either changing from inpatient surgery to day surgery or spending less time as an inpatient. The first group (about one-quarter) are those admitted one night before an operation which took place in the afternoon. Possibly such patients had valid reasons for their early admission, however, most of them did not report any health problems or difficulties in arranging transport. The second group (45 per cent) are those who were admitted one night before surgery and were discharged the following day. Excluding those who reported health problems, most of these patients stayed with families after surgery and transportation was not a problem. It seems appropriate and reasonable to question whether all (or perhaps many) of these groups of patients needed to stay overnight in hospital.

### **Family support**

Families were the main source of help for both the day surgery and inpatient groups, however, inpatients received more help overall following discharge. This could be related to inpatients' poorer health situation and hence their reduced ability to undertake daily living activities. A previous study by Lowe et al. (1991) also found that the family was the main source of help for cataract surgery patients, both day and inpatient.

Usually day surgery patients are required to have a family member or friend present on the day of surgery. Families also have to know about the level of help which may be required, so that they can ensure that they have the ability to assist patients, before surgery is provided on a day basis. Such families are more likely to be able to provide more suitable help for patients, compared with inpatients' families. A previous study found that day surgery patients had no problems in arranging for someone to accompany them after surgery (Davies & Tyers 1992).

### **Outcome and level of satisfaction**

In this study most patients experienced an improvement in vision after their operation, with outcome in the day surgery group being as good as in the inpatient group. Other studies have found similar results (for example, Davies & Tyers 1992; Holland et al. 1992; Steinberg et al. 1994).

Most patients took one week or so to recover back to normal, such recovery being unrelated to the type of anaesthetic. One reason for this may be that cataract surgery is not complicated and does not take longer than one hour. Hence the

drug effect should not be maintained too long in a patient's body, even if the surgery was under general anaesthetic. Many day surgery patients felt that they had recovered more or less back to normal the day after surgery. Not surprisingly, inpatients with reported health problems typically took a somewhat longer time to recover.

Around 94 per cent of patients were satisfied with their cataract surgical experience. Whilst only 6 per cent were to any extent dissatisfied, in general, patients were less satisfied with the information provided and the anaesthetic they received.

### **Cost considerations**

Our study found that the average cost of inpatient surgery is higher than day surgery in terms of both total cost and client payment. In particular, more than half of day surgery patients made no payment at all, compared with 20 per cent of inpatients. The specific reasons for these differences could not be clearly identified from this study. Previous studies have confirmed such cost differences, which typically relate to the length of hospital stay, extent of nursing care provided and admission fees (Davies, Limacher & Powell 1987).

### **Recommendations**

Based on the study findings, the following general recommendations are made.

1. The existing patient selection criteria for cataract day surgery and inpatient surgery should be examined. A move towards more effective case management would decrease the number of patients having an unnecessary stay in hospital. Dealing appropriately with the concerns of patients and their families is important, related to such effective management.
2. The identification of health problems in this study was based on the self-report of respondents. This obvious limitation related to identifying significant health problems implies a need for further investigation of specific health conditions limiting or constraining the use of day facilities.
3. The study has identified that many cataract patients appear to have the potential to be shifted from being inpatients to day surgery patients. The actual extent of such a change cannot be accurately determined from this research alone and requires additional investigation.
4. All patients who participated in the study were private patients and further research is necessary to be able to identify differences between public and private casemix related to cataract surgery.

5. This research project has indicated the potential for cost saving. However, the specific areas for cost savings need to be studied further. The cost and other impacts of better management of cataract patients and an increased utilisation of day services needs to be examined further at an individual hospital level in order to ensure the best use of limited resources.

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