

Factors Associated with Out-of-Pocket Expenditure among Patients Admitted for Cataract Surgery under District Blindness Control Society Scheme: A Cross-Sectional Study from a Private Medical College Hospital of South India

Rashmi Shambhu, Kibballi Madhukeshwar Akshaya¹, Anupama Bappal, Rashmi Jain, Vidya Hegde, H. Pavithra¹

Departments of Ophthalmology and ¹Community Medicine, Yenepoya Medical College, Yenepoya (Deemed to be University), Mangalore, Karnataka, India

Abstract

Background: The National Programme for Control of Blindness and Visual Impairment in India supports the management of various conditions of the eye including cataracts. **Objective:** The objective of this study is to estimate out-of-pocket expenditure (OOPE) and factors associated with it among patients admitted for cataract surgery under District Blindness Control Society (DBCS) scheme. **Materials and Methods:** A cross-sectional study was conducted in a Medical College Hospital of Coastal Karnataka, South India. Data were collected using a predesigned semi-structured interview schedule from 100 patients admitted for cataract surgery under DBCS scheme. Costs were reported as median values with interquartile range (IQR) and compared using the Kruskal-Wallis test. **Results:** Median total cost incurred by the patient was INR 1700 (IQR 1052–2575). Median direct costs (1425, IQR 762.5–2200 INR) included medical expenditure (600, IQR 0–1475 INR), mainly contributed by the treatment of systemic comorbid conditions and nonmedical expenditure toward travel. Median indirect costs (400, IQR 200–600 INR) included loss of wages for the patient and the bystander. **Conclusions:** OOPE for cataract surgery among DBCS patients was associated with the presence of comorbidity, postponement of surgery, duration of hospital stay, and distance traveled by the patient.

Keywords: Cataract surgery, comorbidity, economic cost, health expenditure, National Program for Control of Blindness, Out-of-pocket expenditure

INTRODUCTION

Out-of-pocket expenditures (OOPE) pose a barrier to the patient to access healthcare services, and this may lead to impoverishment of the households. In India, 64.7% of healthcare is financed through out-of-pocket payments by households.^[1] The Government of India has several programs to provide Universal Health Coverage free of cost to all and thereby intends to reduce OOPE.^[2]

The National Programme for Control of Blindness and Visual Impairment (NPCBVI) is one such program which aims to tackle the problem of avoidable blindness in India and to provide the “Right to Sight” to every citizen of India free of cost. It is a centrally sponsored scheme implemented in a decentralized manner through the District Blindness Control Societies (DBCSs). Participation of the private sector and

Non-governmental organizations (NGOs) is encouraged and made accountable. This has been a very successful program which has achieved a significant reduction in the prevalence of blindness and visual impairment in India over the past years.^[3] Recurring grant in aid of Rs. 2000/- per case is released to NGO/private sector through DBCS toward patients undergoing cataract surgery.^[4]

Address for correspondence: Dr. Kibballi Madhukeshwar Akshaya,
Department of Community Medicine, Yenepoya
Medical College, Yenepoya (Deemed to be University),
Mangalore - 575 018, Karnataka, India.
E-mail: docakshay@gmail.com

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Hence, any patient with cataract (who cannot afford the cost of surgery) can get cataract surgery with intraocular lens implantation provided under the scheme free of cost. It is paradoxical but true that there could be some circumstances when this patient may have to spend some money (in the process of seeking care) to avail the so-called free services. This study was conducted to estimate the out-of-pocket expenditure (OOPE) and factors associated with it among patients admitted for free cataract surgery under DBCS in a medical college hospital of coastal Karnataka.

MATERIALS AND METHODS

Study design and context

This cross-sectional study was conducted in a 950-bedded medical college hospital of Dakshina Kannada District, Karnataka. There are seven NGOs (including the study site hospital) in the district enrolled with government for participation in NPCBVI.^[3] The hospital receives patients mostly from the Coastal and Central parts of Karnataka and the Northern part of Kerala.

The study population included walk-in patients and those screened in outreach camps admitted in ophthalmology for cataract surgery under DBCS scheme. Patients who were not willing, noncooperative, unintelligible, and children were excluded from the study.

Data collection

The data were collected between January 30, 2019 and January 15, 2020 by interview method. The interview was done by the principal investigator using a predesigned semi-structured schedule after the discharge order was prepared and just before the patient left the hospital. Patients were interviewed regarding the extra money; they had to spend during this particular event of cataract surgery. Various sociodemographic variables of the patients were also noted.

Sample size calculation

The sample size calculated for the study was 94 using the formula $Z^2 * p * q / e^2$, where “p” is the overall proportion (41.9%) of patients who had to spend OOPE on seeking health care^[2] and “e” is an allowable error of 10%. Of the 116 patients who were operated under DBCS during the study period, 100 patients fulfilled the inclusion criteria and were a part of this study.

Ethics committee approval

Approval from Institutional Ethics Committee (Ref. No. YEC-1/21/2019 dated January 18, 2019) was obtained. The authors obtained written informed consent from study participants after explaining the purpose and the nature of the study in their native language (Kannada/Malayalam).

Definition of terms

- OOPE included direct and indirect costs during the process of obtaining the services which were covered under the free scheme and for any additional services which were not covered under the free scheme

- Direct costs included medical (investigations, drugs, or any other treatment cost) and nonmedical (cost for travel to and fro, accommodation, and food) borne by the patient
- Indirect costs included effect due to the loss of wages of the patient/bystander due to disease and while seeking and receiving treatment for it.

Data management and statistical analysis

Data collected were analyzed using IBM Statistical Package for the Social Sciences (SPSS) for Windows, Version 23.0. Chicago, Illinois, USA, SPSS Inc. Categorical variables such as sociodemographic, clinical, and treatment characteristics were summarized using frequency and proportions. Costs were reported as median values with interquartile range, as the data did not follow normality. Total median (interquartile range [IQR]), direct, and indirect costs were calculated per patient and were compared across categories of sociodemographic and select clinical characteristics using the Kruskal-Wallis test. A $P < 0.05$ was considered statistically significant.

RESULTS

Of the 100 patients interviewed, the majority were aged ≥ 60 years (74%). The mean age of the patients was 64.73 (± 6.6) years. The age ranged from 49–81 years. Males constituted 53% of the patients. The median distance traveled by the patients to reach the hospital was 35 (range 1–30 km). Most patients (62%) did not avail of the transport provided by the hospital. The presence of comorbidity was seen among 73% of patients, and diabetes mellitus was the most common comorbidity (53%). Postponement of cataract surgery was seen among 48% of patients. The median duration of preoperative stay was 1 (range 1–10) days. The median duration of postoperative stay was 1 (range 0–3) days.

Costs incurred toward availing cataract surgery under DBCS scheme are described in Table 1. The median total cost incurred by the patient was 1700 (IQR 1052–2575) INR, which included

Table 1: Costs incurred towards availing cataract surgery under district blindness control scheme (n=100)

Costs	Median (INR)	IQR (INR)
Total cost (direct + indirect)	1700	1052-2575
Direct cost (medical + nonmedical)	1425	762.5-2200
Direct cost-medical	600	0-1475
Related to other ocular conditions	0	0-0
Related to systemic comorbid conditions	600	0-1400
Direct cost-nonmedical	500	100-1037.5
Travel of patient	175	0-400
Travel of bystander	200	0-475
Food/refreshments of bystander	100	100-137.5
Indirect cost	400	200-600
Wage loss of patient	0	0-0
Wage loss of bystander	350	200-400

INR: Indian national rupees, IQR: Interquartile range

direct and indirect costs. Median direct costs (1425, IQR 762.5–2200 INR) included medical expenditure (600, IQR 0–1475 INR) which was mainly contributed by the treatment of systemic comorbid conditions. There was no direct cost to the patient related to routine cataract surgery for DBCS patients. Median indirect costs (400, IQR 200–600 INR) included loss of wages for the patient and the bystander.

OOPE for cataract surgery among DBCS patients was associated with the presence of comorbidity, postponement of surgery, and duration of hospital stay ($P < 0.05$). It was also associated with distance traveled by the patient [$P < 0.05$; Table 2].

DISCUSSION

Cataract remains the most important cause of blindness (66.25%) and visual impairment (71.25%) among the population aged ≥ 50 years, even though cataract surgical coverage is very good (93.2%) in India.^[5] Studies which assessed barriers for the uptake of cataract surgical services have found that uncontrolled systemic comorbidities, especially among the elderly and rural population, financial constraints, no felt need for surgery, and fear of surgery as barriers.^[5-8]

In our study, 73% of patients had at least one comorbid condition which needed medical management. Medical fitness for surgery could be obtained only after the management of comorbidities which led to the postponement of surgery and increase in the duration of hospital stay. In nearly half of our patients, this was the main cause for OOPE. The mentioned three factors were interlinked and were associated independently with OOPE.

It is possible that during high-volume camps with the aim to clear backlogs, only medically fit patients are transported to the base hospital from campsite.^[9,10] Delay caused in getting fitness for surgery due to systemic illness is one of the major barriers for cataract surgery.^[8] In our setting, people from remote/rural areas access medical college hospitals, as they provide quality care at a low cost and also offer linkage with government and private insurance schemes for their other medical ailments. It would be inappropriate to ask the patients to control their medical conditions and then come back for cataract surgery. Rather than viewing comorbid conditions as an obstacle for quick cataract surgery, we must perceive this occasion as an opportunity to provide holistic health benefits to the patient. In a medical college setting, patients can avail these facilities at a subsidized cost, consult various specialists, and take control of their health. Considering a high prevalence of noncommunicable diseases in cataract patients, ophthalmic surgeons must ensure adequate preoperative and postoperative control of the systemic comorbidity coordinated with internists.^[11] In such a scenario, mechanisms need to be evolved in NPCBVI in coordination with Pradhan Mantri Jan Arogya Yojana (health insurance scheme for the poor by the Government of India)

Table 2. Costs incurred during admission and surgery for cataract under district blindness control scheme according to sociodemographic and clinical characteristics (n=100)

Characteristics	Groups	Number	Total cost (Rs.) (IQR)	H*	P	Direct cost (Rs.) (IQR)	H*	P	Indirect cost (Rs.) (IQR)	H*	P
Age	Up to 60 years	26	1800 (1337.5-2800)	1.17	0.280	1255 (890-2062.5)	0.0	0.99	450 (375-800)	8.75	0.003
	61 years and above	74	1600 (937.5-2525)			1450 (737.5-2200)			400 (150-500)		
Distance traveled by the patient to reach the hospital	>35 km	49	2050 (1500-3150)	9.89	0.002	1500 (1050-2700)	7.83	0.005	400 (200-600)	1.89	0.169
	≤35 km	51	1400 (850-2200)			1100 (500-1800)			400 (200-500)		
Availed free transport provided by the hospital	Yes	38	1525 (887.5-2412.5)	2.44	0.118	1050 (395-2025)	4.77	0.029	400 (200-625)	1.69	0.193
	No	62	1800 (1300-2912)			1500 (857.5-2250)			400 (200-500)		
Presence of a comorbidity	Yes	73	1950 (1300-2925)	5.74	0.017	1500 (875-2250)	9.53	0.002	400 (200-550)	1.56	0.693
	No	27	1400 (750-1900)			860 (350-1300)			400 (200-700)		
Postponement of surgery	Yes	48	2225 (1600-3275)	22.45	<0.001	1775 (1450-2575)	23.68	<0.001	400 (225-600)	2.83	0.093
	No	52	1350 (750-1837.5)			880 (462.5-1437.5)			200 (200-400)		
Patient being an earning member	Yes	23	1900 (1100-3100)	0.97	0.326	1100 (400-2250)	0.51	0.476	700 (400-800)	26.74	<0.001
	No	77	1610 (1025-2400)			1450 (825-2100)			300 (100-400)		
Patient's bystander being an earning member	Yes	73	1850 (1100-2825)	3.40	0.065	1450 (725-2200)	0.01	0.904	400 (250-600)	34.86	<0.001
	No	27	1500 (850-2200)			1400 (850-2200)			0 (0-200)		
Duration of hospital stay	Up to 2 days	52	1350 (750-1837)	22.45	<0.001	880 (462.5-1437.5)	23.68	<0.001	200 (200-400)	2.83	0.093
	More than 2 days	48	2225 (1600-3275)			1775 (1450-2575)			400 (225-600)		

*Kruskal-Wallis test, $P < 0.05$ is considered statistically significant. IQR: Interquartile range

to address the management of these chronic diseases and decrease the OOPE.^[12]

The presence of a bystander is important for elderly patients, especially with comorbidities. This is a safer option for the patient as well as the hospital authorities. However, there is an issue of loss of wages with each day of increased hospital stay. In our study, the loss of wages for the patient and the bystander constituted to 400 (200–600) INR.

Data were analyzed from the 71st round of the National Sample Survey Organization, India, revealed that OOPE toward accessing cataract services in India was INR 2191 (SE 172) in the public health care set up which is similar to the findings from our study.^[13] In a study from Sri Lanka, the direct total OOPE for a patient undergoing cataract surgery was SLR 25407. Cost of transport, food, investigations, drugs, lens and other consumables, and cost of a bystander, accounted for 97% of OOPE. The total cost of surgery was SLR 41075 (US\$ 310).^[14]

Direct nonmedical cost constituted 49% of total direct cost among patients undergoing cataract surgery in Nigeria which is similar to the findings from our study. The investigators found that, despite the subsidy, the cost was still likely to be a barrier to accessing cataract surgery, as the total direct costs represented at least 50 days income for 70% of the local population. They opined that the provision of transport would reduce direct nonmedical costs.^[15] In our study, 62% of patients did not avail of the transport provided by the hospital. This may be because they were walk-in patients or chose to come at a time convenient to them (not on the same day from campsite). The reasons for the patient's travel to far-off places for cataract surgery despite the availability of DBCS services in their own district need to be further investigated.

There was no direct cost to the patient related to routine cataract surgery for DBCS patients in our study. We must note that the amount patient had to spend was minimal, as the hospital provided services in a substantially subsidized cost. Food and refreshments were provided free of cost for the patients. There were also instances where patients got waiver of all the charges when they could not afford to pay from pocket at the time of discharge. These are some of the reasons that make any reader feel that the OOPE by these patients is not high. However, findings from this study cannot be generalized owing to its hospital nature, small sample size, and regional variations in service utilization.

CONCLUSIONS

OOPE for cataract surgery among DBCS patients was associated with the presence of comorbidity, postponement of surgery, duration of hospital stay, and with distance traveled.

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Conflicts of interest

There are no conflicts of interest.

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