

Cataract Operations by Arvind Medicos Services: Attempts for Awareness and Brining Hope for Commoner from Tamil Nadu, to Enjoy Life, Colors and for Well-being

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Synopsis: Change of trend in barriers for uptake of cataract surgery seen as lack of awareness about cataract and non-utilization of services by not visiting hospitals, unavailability of family member, associated systemic disease, lack of time followed by Direct -indirect surgery cost, fear of surgery, waiting for free camp, etc.

Abstract: Purpose: To assess the barriers for delayed uptake of cataract surgery in an area with high cataract surgical rate. Materials and method: A short-term descriptive study was conducted in patients with bilateral blindness due to cataract presenting to our hospital. Socio-demographic data were entered in a proforma. Questionnaire, surveying knowledge about cataract and barriers to cataract surgery, was administered by myself in the local language (Tamil). Results: 87829 patients operated for cataract out of which 2273 had best corrected visual acuity less than 3/60 in better eye contributing to 2.587% of total blindness. We interviewed 150 patients (61.3% women, 38.7% men) with mean age of 62.8 years. Most of this patient were illiterate (68%) from rural area (76%). Bilateral cataract (visual acuity less than 3/60) responsible for bilateral blindness contributed mainly by mature cataract (58%), followed by (18.7%) of near mature cataract, (13.3%) of hyper-mature cataract and (10%) by brown cataract. Lack of awareness about cataract (68%) and services available, no one to accompany the patient to hospital (48%), associated systemic disease (42%), lack of time (37.3%), cost of surgery (30.7%), fear of surgery (17.3%), no nearby hospital (10.7%) transport cost (9.3%) etc. are the major barrier delay uptake of cataract surgery were found in our study. Conclusion: It is concluded that Awareness about cataract and increase utilization of services to be intensified with the help of health care worker and need for further expansion of outreach services.

Keywords: Vision, Blindness, cataract, Delays, surgery, awareness

1. Introduction

We may say that a living body or organ is well designed if it has attributes that an intelligent or knowledgeable engineer might have built to achieve some sensible purpose such as 'seeing'. Our eyes with the help from light make us worthy for leading the Life. The nature the master craftsman made the design of eyes near to perfection through evolutionary processes including adoption. There is an interesting question: "how could an organ so complex evolve?"^[1] Without an eye you are totally blind. With half an eye you may at least be able to detect the general direction of a predator's movement, even if you can't focus a clear image. And this may make all the difference between life and death.^[2]

The eye is an optical instrument. The resemblance to camera is obvious. The iris diaphragm is responsible for constantly varying the aperture. The lens, which is really only part of a compound lens system, is responsible for the variable part of the focusing. Focus is changed by squeezing the lens with

muscles. The image falls on the retina at the back, where it excites photoreceptors.

A cataract is a clouding of the normally clear lens of your eye. For people, who have cataracts, seeing through cloudy lenses is a bit like through a frosty or fogged-up window.

Cataracts cause half of all cases of blindness (50%) and 33% of visual impairment. It is mainly due to aging and trauma or radiation exposure. The underlying mechanism involves accumulation of clumps of protein or pigment in the lens that reduces transmission of light to the retina at the back of the eye. Diagnosis is by an eye examination and doctors have developed methods to remove the cloudy lens surgically and replace it with an artificial lens which constitute the necessary steps of cataract operation. After the surgery, the quality of Life of patients gets improved. Phacoemulsification is the most widely used cataract surgery. Ultrasonic energy is utilized to emulsify the cataract lens. However, the treatment is expensive and hospitals require high grade infrastructure.

The Doctors at Aravind Eye Care system are experts and motivated for imparting new hopes for blind people. The Government is also alert and forms schemes and programmes to tackle the problem of blindness particularly arising from cataract. There is another lacuna in this respect, that is, the poor economic conditions of patients and lack of awareness about the blindness by cataract.

In the present work, the authors have made the survey to find the reasons for delay in accessing treatment in patients with blindness due to bilateral cataract at the time of presentation in a tertiary eye care centre. The survey report and analysis are presented in the following pages.

Professional interest and technological up-gradation of skills and the availability of affordable equipment and intraocular lenses have all fuelled the increase in cataract surgery.^[3,4] Most of the states in the country have already achieved a CSR (Cataract Surgical Rate) of >4000 per million populations. This increased performance will reduce the prevalence of blindness and serve visual impairment in the country as half the blindness in India is attributable to cataract.^[5] In Tamil Nadu, the prevalence of blindness was 7.3 per 1000 populations. The state has been a pioneer in tackling blindness, particularly arising from cataract. Our survey aims to find missing link to control blindness.

In Nigeria, an idea of reducing cost was tried for uptake of surgery^[6] with a result of moderate increase in uptake of surgery without alteration of age and gender balance. Similar attempt in Sudan was made with a conclusion that the barriers for not taking up cataract surgery services are cost of surgery and lack of awareness followed by waiting for maturity.^[7] Fear of surgery and waiting for foreign NGO campaign surgery were found to be main reasons for refusal of free surgery by Kagmeni Giles et al.^[8] Aditi Shah^[9] reported that in Urban Cape Town, the barriers that women face is the problems due to transport facilities as well constrains due to leaving daily work responsibilities. Recently, it has been suggested that the trend is changing due to bad case selection and poor service provision in Karnataka. Advice to wait for cataract maturity was amongst the other common reasons for the delay in availing surgery.^[10] Poverty, lack of family support and belief that is an unnecessary procedure as well waiting for free service are the main factors preventing patients for cataract operation as reported in a study from Kathmandu.^[11] It has been suggested that one fourth of the cataract blindness in Kerala can be cured if surgical coverage was equal between sexes while stressing a need for increased uptake with respect to female patients.^[12] Significant association of cataract seen with low literacy status, outdoor occupation, family history of cataract, whereas no association was noted with other factors like sex, socio-economic status, Diabetes Mellitus and hypertension in a study conducted in villages of Jammu.^[13]

2. Materials and Methodology adopted for Analysis

The authors have carried-out the survey for ophthalmology studies for patients undergoing cataract operation at Tertiary Eye Care Hospital, Aravind Eye Hospital and Postgraduate Institute of Ophthalmology at Madurai in Tamil Nadu.

Patient selection criteria were chosen on the basis of domicile status (from Tamil Nadu only), having age more than 50 years and needing bilateral cataract operation with respect to patients. The cases mainly concerned with unilateral cataract, congenital, developmental cataract, and complicated cataracts as well as cases belonging to other causes for blindness were excluded. A verbal questionnaire including questions on barriers to access, reason for delayed action etc. based on studies made by G. Venkata S. Murthy.^[14] The diagnosis of cataract severity was made using Snellen's E. Chart.^[15] The questionnaire was written in English and Tamil languages. It consisted in first part with general question like patients's age, education, occupation, residence etc, while the second part deals with knowledge on awareness about cataract and reason for delay for cataract surgery.

The details about questionnaires are summarized in Part 1 and 2, respectively. (Study data collection proforma)

2.1 Analysis of the Data

The information collected from patients has been recorded in a Master Chart. Following G. Venkata S. Murthy's^[16] method, the sample size (n) was estimated using the equation:

$$n = \frac{t^2 \times P \times (1 - P)}{m^2}$$

where t is confidence level at 95%, P is the estimated prevalence of bilateral blindness due to cataract (5.3%) and m is the margin of error at 5% (≈ 0.05). A sample size of 150 was fixed for the purpose of better accuracy. Further, analysis was undertaken with the help of computer and Epidemiological Information Package (EP).^[17] Statistical analysis which includes, mean and standard deviation, Chi square, P values and students 't' parameter was appropriately made. By making a comparison of various tests with respect to variables, a 'P' value is estimated. A 'P' value less than 0.05 signifies a significant relationship.

A copy of Master Chart, tables incorporating answers (including key for the chart) and other computational details are given separately as Supporting Information. Copies of consent form and ethical committee clearance form are also included in Supporting Information.

3. Results

3.1 Data Description

The patients operated were 87829, out of which 2273 had best corrected visual acuity less than 3/60 in better eye contributing to 2.587% of total blindness (26.2% of states cataract surgeries)

Aravind eye care system in Tamil Nadu performed 262752 of cataract surgeries in 2015-16 (74.8% of states).

3.2. Analysis

The sample size was of 150 patients. The average age of the patient was 62-8 year's ±9.9years. The female to male ratio was 61.3 to 38.7%, while the occurrence of bilateral cataract was seen to be more in females than in males. The percentage of patients handled from rural area was more (76%) than those leaving in urban areas, while 98.7% of total patients were married. The literacy rate amongst patients was low of 31.5%. Majority of patients with bilateral cataract were found to be not working. In patients with bilateral cataract (visual acuity less than 3/60) responsible for bilateral blindness contributed mainly by mature cataract (58%), followed by 18.7% of near mature cataract, 13.3% of hyper-mature cataract and 10% by brown cataract. Majority of patients studied had shown light perception or hand movement of visual acuity in to be operated as well as in non-operated eye. It was noted that many of the patients were not worried about vision and they visited the hospital only because of eye pain with discharge or production of colour halos. 67% of the patients had never visited the hospital before shows non utilization of the services. The main reasons for not utilizing eye care services were due to lack of awareness and poverty.

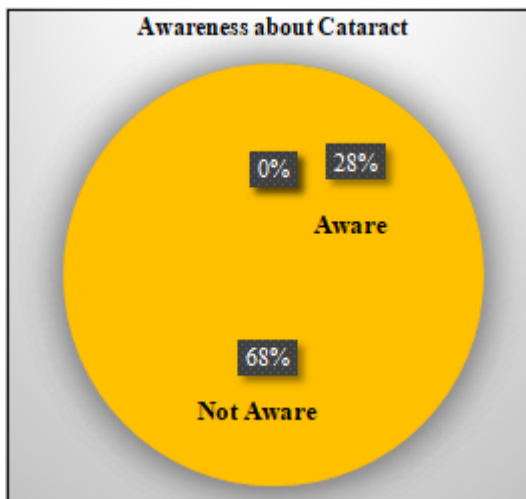


Figure 1

It was noted that 48 patients out of 150, were aware of cataract, nearly half of them waited for about 6 months till severe vision has lost (figure 1). The decision of making a surgery was suggested by family members in most cases and in few patients only made the decision themselves. The decision for surgery was made by others may be because of cost and availability of time factor involved.

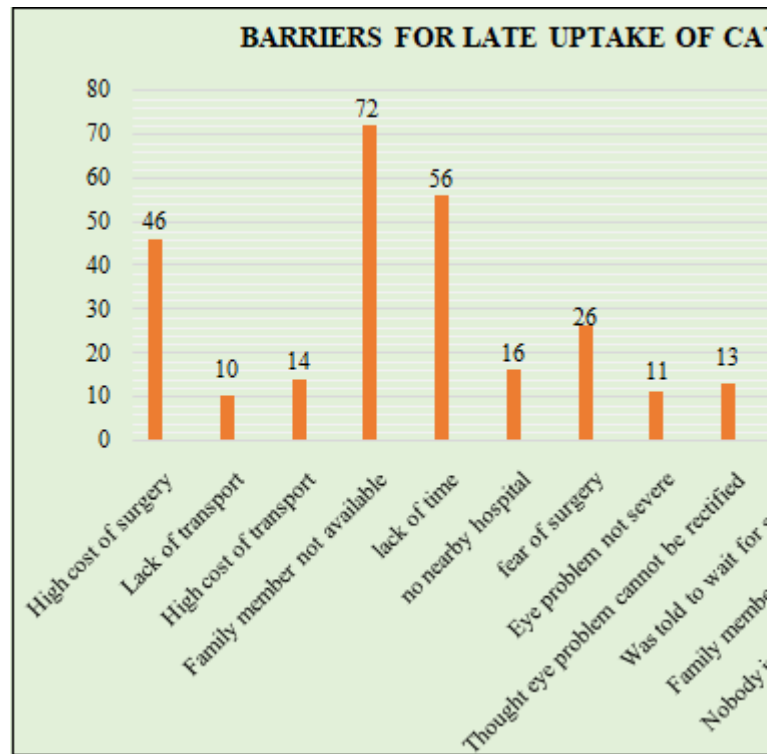


Figure 2

The analysis of the datapoint-out that dependent population requires assistance in the form of physical support, financial back-up and literacy. The female population heavily depends upon health care, personal expenditure, physical and emotional support from the bread-earning male population. Due to low literacy, unavailability of attender, expenditure to be incurred, patients from rural background tried not to visit many doctors and get delayed in treatment and operation. Fear and no information about free camps, as well family problems do contribute in delay for operations. Therefore there are several barriers which cause hindrance to cataract surgery. Also, there is a feeling that eye problem cannot be rectified in rural India. (As shown in figure 2)

4. Discussion

We have realized that during the last two decades, the healthcare services have been improved a lot in urban area of our country but the same are poor in rural India. The prevalence of cataract blindness problem can be tackled with the help from World Bank, public and private sectors.

In the study reported above, we have found blindness due to bilateral cataract is seen mostly in elderly population as seen also in reported works. Transport facilities and family support are the major requirements for female patients undergoing cataract operations. The literacy rate, awareness about cataract, and will for leading happy life are the pre-requisites for patients from rural India. Free of charge operations in camps do not help much as expenditure for other expenses and availability of time is needed. Our studies suggested that older people with vision problems in rural area are not utilizing eye services because of fear and lack of social support. Therefore there is a need of education to masses and hence to whole society. The waiting period for attention to vision loss can again be attributed to the

various population characteristics of the patients including age, sex, income and social background. It has been suggested that many cases of visual impairment could be avoided by higher level of awareness in relation to the health care needs of society.^[18]

Awareness regarding cataract can be spread by Doctors and social organization as self instruction modules have given good results.^[19] In rural India, the theme of dreaming and seeing the world by adopting for cataract operations can be spread via community healthcare workers like ASHA and ANGANWADI workers. These trained semi-health care workers also have to be provided training for other components of health including child and women welfare, nutrition and environmental problems such as Covid. Spending of money has to be emphasized through health insurance for everybody. A new barrier found emerging is unavailability of family member as they not getting leave or busy with kids schooling, and associated other systemic diseases in patients which delay the cataract surgery in either of the following way: as the patients already taking treatment in other hospital and following up there or not getting clearance for surgery or high cost of systemic treatments mainly for diabetes mellitus and hypertension. Other systemic disease mention by patients are thyroid related disease, stroke and few patients are wheel chair bound because of stroke or some trauma or because of old age. Few of the patients were found to be mentally challenged. A change in trend is observed in barrier preventing uptake of cataract surgery and leading to blindness. The barriers described earlier have to be prevented by proper planning by Government who can create health centers with all infrastructure for performance of cataract surgeries. Of course, we are observing an upward change of awareness in the society. Fear of surgery has to be removed and positive rays of hope have to be generated to impart vision for patients suffering due to cataract.

5. Conclusions

We conducted a survey (one year duration) for patients undergoing cataract surgery at Aravind eye care system hospital at Madurai in Tamil Nadu. By giving questionnaires to patients, the basic data on the psychology, financial capability, sex, age etc are collected. The analysis of the data using statistical concepts and computer software was made out of 87829 patients operated for cataract, 2273 had best corrected visual acuity less than 3/60 in better eye contributing to 2.59% of blindness. Major barriers for delaying surgery are assessed. The factors like transport, no accompanying person, lack of education, lack of awareness, associated co morbid condition, lack of time, no family support and fear are found to be contributing heavily for delay in surgery. The awareness causing activity, support from NGO, ASHA worker and Anganwadi, village leader some medical practitioner at primary health care centre (PHC)/ community health care center (CHC) people can make the changes in minds of rural patients suffering from cataract. Information sessions can be conducted in temple, darga, community rooms and in PHC/CHC. Information leaflets to be available at gathering for attenders to take home to family and friends. Also Government initiatives on large scale are needed to have hospital facilities with trained,

expert doctors. Tremendous advancement in the techniques and medicines has been made in the science of ophthalmology through LASIK, Femto cataract surgery, phacoemulsification of cataract and construction of artificial lenses which can impart vision to the becoming blind human beings. We must emphasize the need of eye-care services in rural India to make India as healthy, rich and life enriching nation.

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7. Conflict of Interest

The authors declare no conflict of interest for monetary benefits.

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Study Data Collection Proforma

MRNO:			
NAME:			
ADDRESS:			
Age:			
Gender:	Male	Female	
Marital status:	Married	Unmarried	
Area of residence:	Rural	Urban	
Are you literate:	Yes(specify)	No	
Are you working:	Yes(specify)	No	
Patient type:	Paying	Subsidized/free	Camp
EXAMINATION	RE		LE
UVCA			
BCVA			
IOP			
Cataract diagnosis	Right eye	Left eye	
Near mature			
Mature			
Hyper mature			
Brown			
Phacomorphic			
Phacolytic			

Which eye problem best describes why you came for eye care?	<ul style="list-style-type: none"> • Cloudy, blurred or reduced vision • Problem with light, glare, or halos • Redeye • Eye pain, discomfort, • Eye watering or discharge • Eye injury • Other(specify)
When was the last time you went to an eye hospital?	<ul style="list-style-type: none"> • In the last 30 days • Between 1 month and 6 months • Between 6 months and less than 1 year ago • Between 1 year and less than 2 years ago • More than 2 years ago • Didn't go anywhere for eye check-up
Who is the primary decision maker for you to undergo surgery?	• Yes <input type="checkbox"/> No <input type="checkbox"/> If no specify-----
Who is paying for your surgery?	• Myself <input type="checkbox"/> Others <input type="checkbox"/> if others specify:-----
Are you aware that you have cataract in both eyes?	• Yes <input type="checkbox"/> No <input type="checkbox"/>
When did you come to know that you have cataract in both eyes?	<ul style="list-style-type: none"> • Today only • <1month • 1-3month • 3-6month • >6months

<p>How did you come to know that you have cataract in your eyes?</p>	<ul style="list-style-type: none"> • Only during examination today • Optical shopkeeper • Vision centre • Aganwadi worker • Eye doctor • Relative • Other, specify:
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8. Which reasons best explain why you did not get eye surgery earlier?

1.	Could not afford the cost of surgery
2.	Transportation to eye care facility not available
3.	Could not afford the cost of transport
4.	Nobody in family was available to accompany me
5.	Do not have anytime.
6.	No eye hospital nearby and did not know where to go
7.	Fear of surgical treatment
8.	Eye problem was not serious enough to seek treatment
9.	Thought the eye problem could not be treated
10.	Previously was told to wait until the cataract matures
11.	Family member who is the decision maker was reluctant to approve my having surgery
12.	Did not know any other person who had undergone sight restoring cataract surgery in my village/town
13.	Was waiting for free surgery/free camp
14.	Having some other diseases like DM, HTN, CARDIAC/NEPHRO issues
15.	Other