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Research Article

Community Based Study on Sight Restoration Assessment After Cataract Surgery in Rural Area of Pondicherry

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Abstract: Good eye sight is an important indicator of quality of physical health of elderly population, which is determined by cataract surgery coverage rate. There is a need of assessing the sight restoration after cataract surgery in the communities as long term strategy. The main objective is to assess the vision recovery after cataract surgery among rural population of Pondicherry. The methods were Community based, quantitative and descriptive study was carried out during November 2014 to January 2015 in villages of Pondicherry using pretested semi open ended questionnaire at their door steps. Sample size of 300 subjects aged 50 years or more were selected using multi stage sampling techniques. Information obtained on details about cataract surgery and clinical assessment of vision acuity was done using Snellen chart. In results the number of eyes were analysed among 110 and 190 among men and women respectively was 392. Majority of the subjects had undergone cataract surgery in the last five years, in government hospitals and at free of cost. The poor vision (6/18 or more) was 45% among the operated eyes and more among females than males. The co morbid conditions were present in one third of subjects before surgery. In conclusion the prevalence of poor vision was present among nearly half of the subjects after cataract surgery in the last ten years and one third of them had co morbid conditions.
Keywords: cataract, Pondicherry, surgery, clinical assessment.

INTRODUCTION:

Cataract is the common cause for preventable blindness throughout the world and two third cases of blindness are due to cataract changes. Most of these are related to the ageing process and it may develop from injuries, inflammation and some other eye diseases[1]. The prevalence of cataract above the age of 50 years is as high as 50% in many developing countries. Globally it is estimated that 20 millions are blind due to cataract and responsible for 51% of world blindness.[1,2] The mission of preventable blindness due to cataract is not surgery alone but recovery of vision to normal which should be sustainable for lifelong. Maintenance of such quality of vision acuity is determined by various factors such as underlying health conditions, correction of vision before and after cataract surgery, infection control measures, periodic follow up, glaucoma and complications arising out of the existing diseases etc. [2] The vision recovery is not related to visual perception of the objects or subjects but direct relation to the quality of life of the individual especially during old age. Thus visual acuity recovery reduces the DALY and makes individual in improved quality of life, may be bread earning capacity to some of them. [1, 2, 3]

Assessment of visual acuity immediately after cataract surgery with or without spectacle is a routine phenomenon to the ophthalmologists and considerable number of operated people go home with better vision and few with poor vision.[2,3,4] It is a common practice that the follow up at fourth, eighth weeks and 6 months were conducted at hospital or community level to know the effect of cataract surgery on vision acuity and only few some studies are available on long term effect on vision acuity at the community level. [3,4,5,6] Periodic assessment is required in all the cases after cataract surgery irrespective of techniques of surgeries, correction of vision and health conditions for improvement of visual acuity

This study was undertaken with an objective to assess the vision recovery after cataract surgery among rural population of Pondicherry

METHODOLOGY:

This is a cross sectional, descriptive, quantitative, and exploratory and community based study conducted during November 2014 to Jan 2015 in

the rural area of Pondicherry. This rural population is accessible for cataract surgery in ten different hospitals or eye care centers within a distance of 20 kilometers apart from the camp approach as per the National program prevention of blindness. The study subjects were selected by multistage sampling method. The sample size was estimated to be 300. The study subjects were individuals who are aged 50 years or above and undergone cataract surgery either in one or both the eyes.

The data was collected in two stages. In the first stage all the individuals aged 50 years or above in the study area was enumerated. In the second stage, data collection regarding details about their socio demographic, cataract surgery related information, perception about their visual acuity and their present health condition. This was followed by assessment of visual acuity of each individual using the Snellen chart at a distance of 6 meters [4]. The data was collected at the doorsteps of the subjects and visual acuity examination was conducted in nearby hall in good sunlight. Poor vision outcome defined in this study as vision acuity of less than 6/18 or more

Statistical analysis

The data was analysed using SPSS statistical software version. The proportions, weighted mean, standard deviation, chi square test for association and student t test were applied wherever necessary. The values were considered as statistically significant if the p value is less than 0.05.

RESULTS

There were 510 individuals in the age of 50 years or above as enumerated in the study area to obtain the sample size of 300 study subjects and 40 percent of them were males. Thirty percent of the study subjects had undergone cataract surgery in both eyes. The total number of eyes included in this study was 392 (208 Single and 184 both).

Table 1 shows there were 110 and 190 males and females in this study, majority of subjects were aged between 60-69 years. The mean age was 64+5 years. The proportion of subjects aged 50 years or above who underwent cataract surgery in one of their eye was 67%. The proportion of cataract surgery was not different between men and women. The proportion of cataract surgeries on single and both eyes are showing increasing trend among men and women with increase in their age group. However, nearly half of the study population did not undergone cataract surgery in both eyes over the age of 70 years.

Table- 1: Distribution of subjects according to age group , sex and number of eyes operated

	Total		Male		Female	
Age group in years	Single eye	Both eyes	Single eye	Both eyes	Single eye	Both eyes
	Num (%)	Num (%)	Num (%)	Num (%)	Num (%)	Num (%)
50-59	45(88)	6(12)	18(86)	3(14)	27(90)	3(10)
60-69	102(79)	27(21)	38(78)	11(22)	64(80)	16(20)
70-79	53(56)	41(44)	21(54)	18(46)	32(58)	23(42)
>80	8(31)	18(69)	1	0	7(28)	18(72)
Total	208	92	78	32	130	60

Tables 2 showing the proportion of males were higher in all age groups, more illiterates among females and majority were working on agriculture based sectors. About 80 percent of the subjects had undergone cataract surgeries in the past five years among both sexes, 60% had utilized government services and two thirds are done free of cost either as need based or camp approach. Nearly 45 percent of subjects had poor vision of 6/18 or above irrespective of single or both eyes and gender. The proportion of vision of 6/24 or above was higher among women than men.

Table 3 depicts the prevalence of co morbid conditions among subjects who had poor vision outcome before cataract surgery was 33 % and this was increased to 39 %. This increase in number was more among male subjects. The common co morbid condition was observed to be Diabetes Mellitus. The proportion of poor vision of 6/18 or more was 45% and it was higher in females than males (57% vs. 34%).

Table-2: Distribution of subjects according to the details of cataract surgeries

	Total Num (%)	Male Num (%)	Female Num (%)	P value
Eyes Operated	392	142	250	
Age group in years				
50-59	51(17)	21(19)	30(15.7)	
60-69	129(43)	49(44.5)	80(42)	
70-79	94(31.3)	39(35.5)	55(28.9)	
>80	26(8.7)	1	25(13.4)	0.03
Education				
Illiterates	169(56.3)	37(33.6)	132(69.5)	
Grades till 10	129(43)	71(64.5)	58(30.1)	
Grade > 10	2	2	0	
Graduates	0	0	0	0.15
Occupation				
Home maker	165(55)	0	165(86.8)	
Daily wage	14(4.6)	9(8.20	5(2.6)	
Retired	4(1.3)	4(3.6)	0	
Farmer	77(25.7)	65(59.1)	12(6.3)	
Business	40(13.3)	32(29.1)	894.2)	
Number of Eyes				
Year of Surgery				
2000-2004	10(2.6)	4(21)	6(2.4)	
2005-2009	68(17.3)	21(14.7)	47(18)	
2010-2014	314(80.1)	116(81)	198(79)	0.001
Place of surgery				
Govt hospital	229(58.4)	88(61.9)	141(56)	
Private hospital	152(38.8)	49(34.5)	103(67.8)	
Charity hospital	1192.8)	4(3.1)	7(2.8)	0.01
Paid for surgery				
Yes	149(38.1)	45(32)	104(41.6)	
No	243(61.9)	96(68)	147(58.4)	0.03
Visual acuity				
6-Jun	1	1	0	
9-Jun	48(12.2)	19(13.4)	29(11.6)	
12-Jun	163(42.1)	56(39.4)	107(43.2)	
18-Jun	92(23.2)	43(29.5)	49(19.6)	
24-Jun	76(19.4)	21(14.7)	55(22)	
Jun-36	12(3.1)	2	10(4.1)	0.001

Table 3: Distribution of subjects according to their poor vision, sex and co morbid conditions

Vision acuity (poor)	6/18	6/24	6/36	Total
Total	92	76	12	180
Male	43	21	2	66
Female	49	55	10	114
Co Morbid conditions				
1.Diabetes Mellitus				
Before surgery	26	24	4	54
After surgery	30	28	4	62
2.Hypertension				
Before surgery	7	6	0	13
After surgery	7	7	1	15
3.Both DM & HTN				
Before surgery	12	17	4	33
After surgery	15	20	6	41

DISCUSSION

The progressive loss of vision is common in cataract which is preventable by surgical correction at appropriate time. The age at onset and maturity of cataract for surgical intervention depends on many factors. The perception of visual acuity plays an important role in deciding about cataract surgery. In this study population, majority were undergone cataract surgery after their age of 60 years or more accounting to 83%. The proportion of cataract surgery remains same among men and women. The total number of eyes analysed for sight restoration was 392 (208+184), men were 142(78+64) and women were 250 (130+120) respectively as shown in Table 1. The mean age of subjects who had undergone cataract surgery was 64+ 5 years and it was higher among subjects in other studies across India.[5,6,7] About 25% of the subjects had undergone cataract surgery in one of their eye before their age of 80 years. It is expected that the cataract surgery on both eyes are to be conducted at convenient interval in the respective age after 70 years for better vision and reduction of complications.

The cataract surgery coverage under blindness control program is increasing over the decades by involving all eye health care service hospitals throughout the country. In this study the coverage of cataract surgeries were less than 60 percent among the people aged 70 and above. This study shows the coverage is low compared to other studies conducted in developed countries [2, 3, 6, 7, 8]. The probable reasons are perception about vision after surgery, poor motivation to undergo surgery in other eye, associated diseases as contraindications, handicapped or low level of comfortness in vision and other symptoms after surgery on one eye irrespective of place of surgery [5, 6].

In this population, majority of them were working in agriculture based sectors and many were illiterate as shown in Table 2. Few of the study subjects were currently employed or doing their own commercial small business indicates the need of good eye sight to lead a healthy economic productive life. The number of surgeries in the past five years is increased in this area attributing to the service availability, awareness, utilisation at higher rate. Another reason could be the number of eye care institutions is growing in number and commitment by the respective government to implement the blindness prevention program in intensive manner in the government or public sectors.

It is a fact to highlight that the quantitative assessment is less important compared to qualitative assessment of vision as cataract surgery. It is unfortunate that the poor vision was reversed at higher percentage rather than at low level as intermediate or long term. The poor vision of 6/18 or more was higher among subjects who have undergone cataract surgeries in both eyes, and high among men than females. Nearly 38% and 55% of total subjects undergone cataract surgery had poor vision of 6/18 or more in single and both eyes respectively. The poor vision was prevalent in more than half of the individuals who had undergone cataract surgery in both eyes. The duration after cataract surgery also affected in the vision recovery. About 8%, 17% and 39% had undergone surgery 5, 10 and 14 years ago respectively in this study. The strong influencing factors are age of the person, time of surgery, cataract changes in the eye, onset of co morbid conditions affecting the outcome of vision acuity [6, 7, 8, 9, 10].

This poor vision is definitely affects the quality of life of the individual after the age of 60 years and associated with the co morbid conditions. It is possible to improve the visual acuity using the corrective spectacles or glasses. Seventy percent of the subjects were corrected for vision acuity or astigmatism after cataract surgery in this study compared to 50% in other study [12]. Few of the hospital studies conducted in India showed 15, 38 and 50 percent in Gujarat, Punjab and Sindhudurg areas respectively [9, 10, 11, 12].

The prognostic factors for vision recovery depend on co morbid conditions that exist before cataract surgery and onset of clinical diseases in the later period of life after cataract surgery. In this study one third of the subjects were suffering from chronic diseases like Diabetes Mellitus, Hypertension or combined, and vision was further affected due to increase in co morbid conditions after surgery as shown in Table 3. There was more number of Diabetics alone as well as Diabetes Mellitus and Hypertension conditions before and after cataract surgery. Hence this could be one of the reasons for poor vision outcome. Physiological and pathological changes in poorly controlled Diabetes Mellitus and Hypertension leads to retinal changes will impair the vision irrespective of cataract surgery could have been contributed towards poor sight after cataract surgery.

CONCLUSION:

The effect of sight restoration was beneficial to half of the study subjects on long term in this population. There is a need for periodical assessment of vision acuity for all subjects and more frequent follow up among individuals affected with co morbid conditions.

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