

An Epidemiological Study of Cataract among Elderly Patients Attending in Eye Camps Arranged by Al-Basar International Foundation in Bangladesh

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Abstract

Background: Cataract is a common cause of visual impairment in the elderly and the leading cause of blindness worldwide. Bangladesh is not exception of this. Though cataract treatment is available across the country but there is no nationwide strategy to prevent this disease. Therefore, this study tried to explore the distribution of this diseases among the elderly patients in Bangladesh to provide some insights about the prevention strategies of cataract. **Methodology:** This descriptive cross-sectional study was conducted among conveniently selected 1020 cataract patients attending in two eye camps of Bagura and Jaypurhat districts in Bangladesh. Face to face interview was taken by using a structured validated questionnaire. Descriptive statistics such as frequency, percentage, mean, median, and standard deviation as well as inferential analysis were used for both categorical and continuous variables with the application of Statistical Package for Social Sciences (SPSS) version 26. **Results:** Out of 1020 cataract patients, male and female were 53.5% and 46.5%, respectively where 69.5% were in the age group of 15-64 years. Approximately 50% of participants were illiterate and 70.6% had family history of cataract. About 42.8% of respondents had identified age as the cause of disease and almost 50.8% were suffered from 1.1 to 3 years. 39.4% had delayed in receiving treatment for having financial issues. Age and gender had statistical significant association ($p < .05$) with the cataract. **Conclusion:** Age and gender based prevention strategies should be planned and implemented as cataract is found to be prevalent on these variables in this study.

Keywords: Cataract, Epidemiology, Eye Camp, Elderly patients, Bangladesh.

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INTRODUCTION

The elderly population is increasing rapidly worldwide. Vision loss among the elderly is a major health care problem which estimates that approximately one person in three has some form of vision-reducing eye disease by the age of 65. The most common causes of vision loss among the elderly are age-related macular degeneration, glaucoma, cataract and diabetic retinopathy. Of these, cataract is a common cause of vision impairment in the elderly and the most common cause of blindness worldwide [1]. The prevalence of cataract increases with age from less than 5 percent in persons under 65 years of age to approximately 50 percent in those 75 years of age and older [4]. Cataracts are cloudy areas that cover all or part of the lens of the eye. In a healthy eye, the lens is clear like a camera lens; light passes right through it and hits tissue at the back of the eye. That's the retina, and it processes images. Cataracts block the lens and make it hard for a

person to see [2]. Consequences can include loss of driving privileges, inability to read or watch television, inability to participate in social activities, and an increased risk of falls [3].

The incidence of cataract can be noticed among all ages and ethnic groups which results in an increasing burden for them as well as to the health care systems [11]. Cataract which can significantly reduce patients' quality of life, is still one of the main ophthalmological public health problems in developed and developing countries, and it is known as the main cause of blindness in many countries. A prior study indicates that 36 million people are blind worldwide, and over 12 million of them are due to cataract [5]. According to the report of the World Health Organization (WHO), cataract is the leading cause of visual impairment in the world, accounting for most blindness (51%) [6]. The prevalence of cataract in

Sweden was 31.5% [7], in Russia was 44.6% [8], and in Myanmar was 40.39% [9]. In the UK alone, age-related cataracts are thought to affect around half of those aged over 65 years to some degree, with this figure rising to 70% in those aged over 85. In France, about 20% of individuals aged more than 65 years are affected, with this figure rising to 60% in those older than 85. Australian studies have shown that the prevalence of cataract doubles with each decade of age after 40 years and that nearly everyone aged 90 years or older is affected by cataracts [10].

Even if cataract can be congenital, metabolic, secondary to ocular and systemic conditions, traumatic or secondary to ultraviolet radiation, about 85% of cataracts are classified as senile or age related which have greatest socioeconomic impact because of its high prevalence [12]. Different factors are associated with cataract development in different countries. One study conducted in Ghana showed that marital status was significantly associated with cataract development [13]. Another study in Nigeria showed that age was significantly associated with cataract as it is true in many other countries i.e., Ethiopia [14]. Some studies have found that cataract is significantly associated with gender and women have a greater risk for developing cataract [15, 16]. When compared with professional work, individuals with a laborer's occupation or related work were shown to have increased risk of developing cortical cataract; individuals in managerial or administrative work have borderline increased risk. A laborer's occupation might be associated with a lower socioeconomic status, which has been associated with increased risk of cataract in a number of studies. It might also be linked to greater outdoor work and exposure to environmental hazards, in which sunlight exposure is a generally accepted risk factor for cortical cataract [17]. Other studies in different countries reported the risk factors associated with cataract, which includes educational status, smoking, diabetes, sunlight exposure and body mass index (BMI) [11, 18].

In Bangladesh (a densely populated country, part of the South East Asia region of the World Health Organization), cataract is responsible for 50–80% of blindness [19]. This burden of blindness could possibly be minimized or reduced if cataract is prevented to occur. Like other countries, the medical sector of Bangladesh is also experiencing technological advancements. As a result, cataract surgery is not considered as a major surgery now a day. However, this invasive procedure imposes physical, mental and financial toll to the suffered person, in some cases on the family members as well. Stop to the occurrence of cataract may contribute in lessening the burden at the individual or familial level. Therefore, the distribution and determinants of cataract is needed to understand for planning a comprehensive population based strategy which may help in combatting the occurrence of cataract. Thus, this study attempts to explore the

epidemiology of cataract in the elderly population of Bangladesh so that policy makers can gain some insight into cataract prevention.

METHODOLOGY

This descriptive cross-sectional study was conducted in 1020 cataract patients in Bangladesh. These cataract patients were selected conveniently from 2 eye camps. These eye camps were open and free of charge for all the people suffering from eye diseases, and were funded by Noor Dubai and conducted by Al Basar International Foundation in Bagura and Jaypurhat districts of Bangladesh from October 2022 to November 2022. Bagura and Jaypurhat districts in Bangladesh were selected conveniently as the study place. Out of 1020 cataract patients, 508 were from Bagura and 512 were from Jaypurhat camp. The presence of cataract among the patients were diagnosed by a bunch of certified ophthalmologists of the camp. Regardless of age, gender, race and religion, the cataract patients who were recommended to get surgery by the ophthalmologists were included as the study participants. The patients, on the other hand, had received medications or spectacles as the treatment of cataract were excluded from the study.

In order to collect the data, a face-to-face interview was conducted upon the selected participants at the study places through using a structured questionnaire. The questionnaire had two sections. First section was designed to extract demographic information about participants including age, gender, educational qualification, occupation, head of household, marital status, type of family and religion. On the other hand, disease history and their knowledge regarding the causation of cataract were collected through the second part of this questionnaire. The questionnaire was validated and reviewed by the advisor of Research, Education and Training Department of Al Basar International Foundation, Bangladesh who is an epidemiologist earned his PhD degree from a renowned university of United States of America.

Necessary permission was taken from the participants before proceeding to data collection. After data collection was completed, it was checked, verified, and edited for consistency to reduce error. The Statistical Package for Social Sciences (SPSS) version 26 was used to analyze the data. Descriptive statistics such as frequency, percentage, mean, median, and standard deviation were used for both categorical and continuous variables. Prior to begin the study, approval was sought from the authority of Al Basar International Foundation, Bangladesh.

RESULTS

In our study, total 1020 Patients were undergone cataract surgery in two different districts

namely Bogra (n=508) and Jaypurhat (n=512) (Figure-

1).

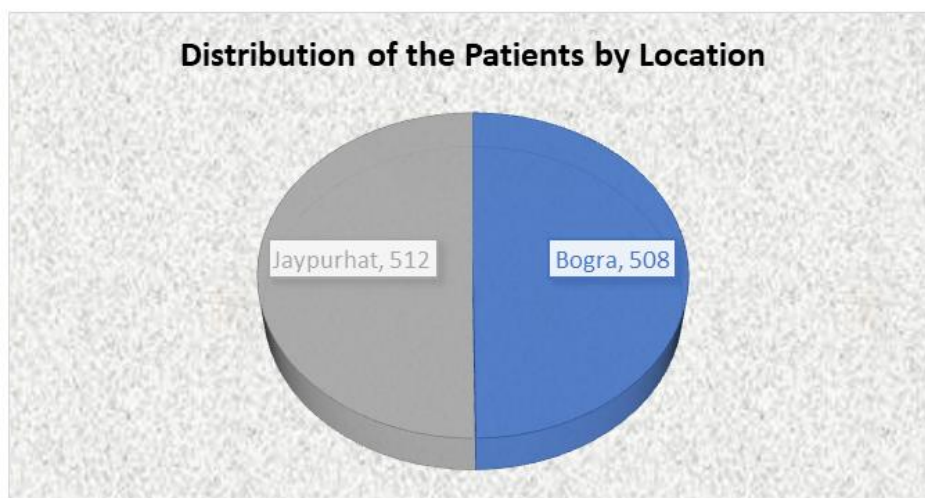


Figure 1: Distribution of the patients by Location

Figure 2 shows that out of 1020 patients, males (53.5%, n=546) were higher than females (46.5%, n=474). The ratio between male and female was 1.15:1.

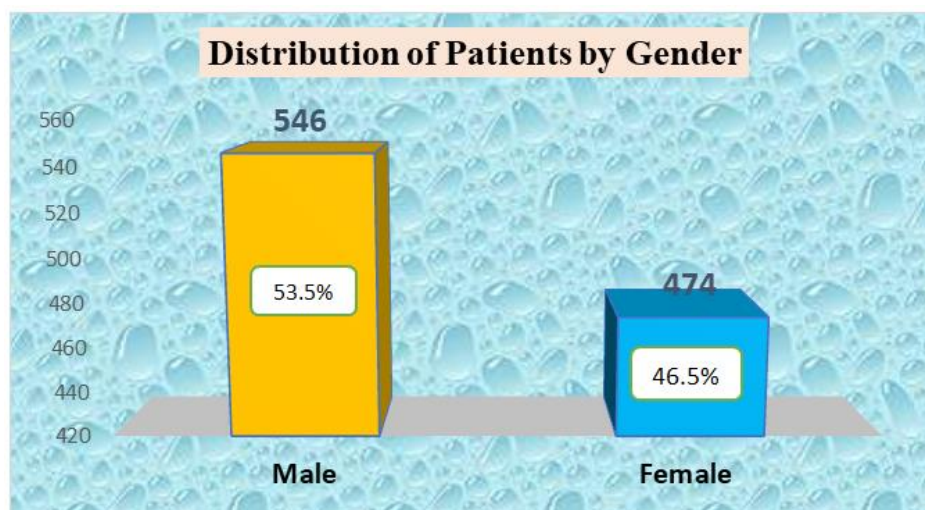


Figure 2: Distribution of Patients by Gender

The mean age of our patients was 58.18 years. Highest percentage of patients (69.5%, n=709) belonged to 15-64 years of age (Table-1). On the other hand, about 30.5% (n=311) patients were aged 64+ years. Regarding education, the highest number (n=510) of participants were illiterate, followed by 268, 141, 73 and 28 participants had primary, high school, graduate and HSC as educational qualification. Out of 510 illiterate participants, 204 were male and 306 were female. On the other hand, male participants outnumbered female participants in primary (nm: 140; nf: 128), high school (nm: 105; nf: 36), graduate (nm: 73; nf: 0), and HSC (nm: 24; nf: 4) degree.

Out of 1020 participants, the maximum number (346) of participants were housewife. Farming was identified as the occupation by 165 of participants where 137 were male and 28 were female. There were

121 retired respondents. Of these, 111 were male and 10 were female respondents. In addition, 82, 78, 76, 57, 48 and 42 participants had mentioned their occupation as unemployment, hotel worker, business, shop keeper, tailor and teacher, respectively.

In regards to the marital status, 999 respondents were married and the rest of 21 were single. When respondents were asked about their family type, the majority of the patients (n=848) said they lived in a joint family, while 172 said they lived in a nuclear family. In the case of religious status, 897 were muslim and 123 were non-muslim. Of 897 muslim, 521 were male and 376 were female. On the other, there were 98 females and 25 males among 123 non-muslim patients. About 420 males and 48 females had stated themselves as the head of household for their family. It was found that 300 patients had family history of

cataracts where 138 were males and 162 were females' respondents (Table 1).

Table 2 illustrates the distribution of participants according to their perception on the occurrence of cataract disease. The highest number (n=437) of respondents stated that aging (ARC) is the main factor for the causation of this disease. Of the 437 participants, 298 were males and 139 were females' respondents. About 262 participants had no idea about the occurrence of this disease. Among them, 160 were

females and 102 were males. About 101 participants had mentioned genetic as the occurrence of this disease. Among them, 70 were males and 31 were females. Approximately 130 participants had mentioned "god gift" as the occurrence of this disease. Among them, 90 were females and 40 were males. About 48 participants had stated the chemical injury as causation of this disease. Among them, 42 were females and 6 were males. Almost 42 participants had mentioned quarreling and assault as the occurrence of this disease. Among them, 30 were males and 12 were females.

Table 1: Socio-demographic information of study patients

Age group (in years)	Sex		Both
	Male	Female	
15 to 64 years	366	343	709
64+ years	180	131	311
Total	546	474	1020
Educational status			
Graduate (Hons/ Masters)	73	0	73
High School	105	36	141
HSC	24	4	28
Illiterate	204	306	510
Primary	140	128	268
Total	546	474	1020
Occupation			
Business	76	00	76
Farmer	137	28	165
Health inspector	5	00	5
Hotel worker	43	35	78
Housewife	00	346	346
Retired	111	10	121
Shop keeper	57	00	57
Tailor	05	43	48
Teacher	30	12	42
Unemployed	82	00	82
Total	546	474	1020
Marital Status			
Married	541	458	999
Single	05	16	21
Total	546	474	1020
Type of Family			
Joint	453	395	848
Nuclear	93	79	172
Religion	546	474	1020
Muslim	521	376	897
Non-Muslim	25	98	123
Total	546	474	1020
Head of Household			
No	126	426	552
Yes	420	48	468
Total	546	474	1020
Family History			
No	408	312	720
Yes	138	162	300
Total	546	474	1020

Table 2: Distribution of patients according to their perception on the occurrence of cataract disease

Reasons behind Cataract	Female	Male	Total
Aging (ARC)	139	298	437
Don't know	160	102	262
Genetic	31	70	101
God Gifted	90	40	130
Injured by chemicals	42	6	48
Quarreling & assault	12	30	42
Total	474	546	1020

Figure 3 presents the duration of suffering of patients with cataract by year. The highest number (n=518) of participants were suffering by cataract from 1.1-3 years. Among them, 318 were males and 200 were females. In contrast, the lowest number (n=44) of respondents were suffering by this disease from 9.1-12 years. Of these, 26 were males and 18 were female

patients. Further, 76 males and 138 females in totals 214 participants were suffering from cataract for less than 1 year. Sufferings' duration for 3.1-6 years was found for 190 participants where there were 100 males and 90 females. In addition, sufferings' duration for 6.1-9 years was found for 54 participants where 28 were females and 26 were males.

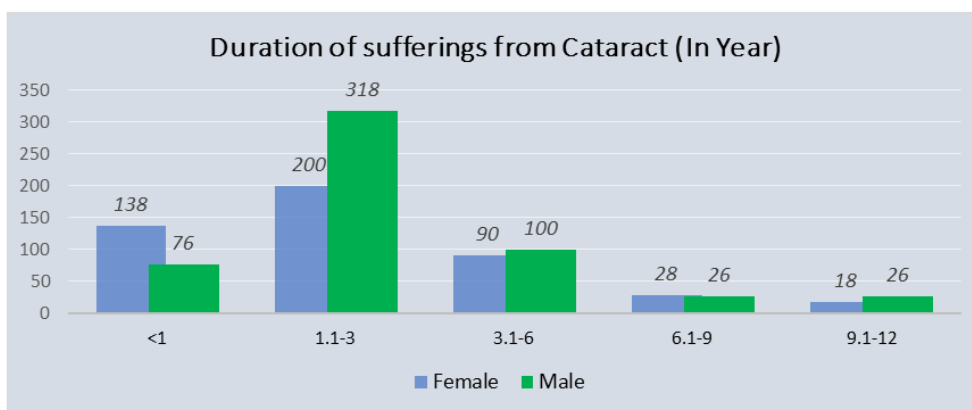


Figure 3: Duration of sufferings from Cataract (in Year)

Reasons for taking this long time to come for treatment is found from the Figure 4. The maximum number (n=402) of respondents had identified the financial reason for not receiving treatment in proper time. Long distance, on the other hand, was identified

by only 41 participants as the reason for not receiving treatment in proper time. Further, unawareness, in-availability of doctor around, and no severe complication in eye was identified as the reason in this regard by 267, 191 and 119 participants, respectively.

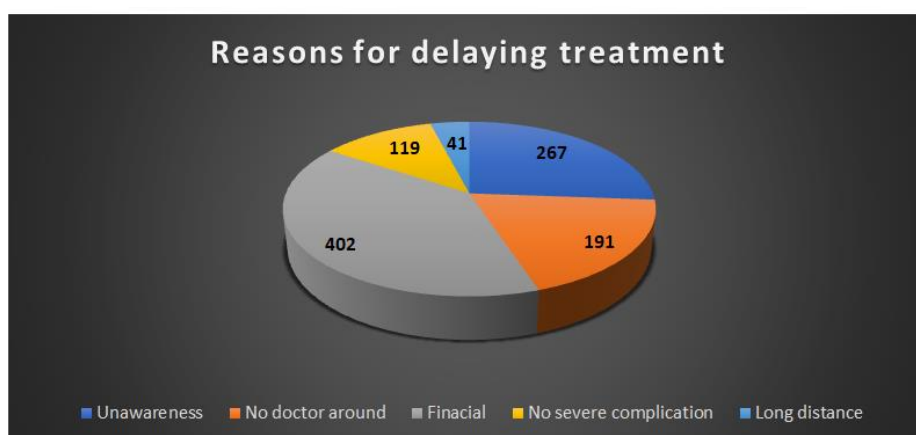


Figure 4: Reasons for taking this long to come for treatment

As illustrated in table 4, Reasons behind Cataract, Duration of sufferings from Cataract (in Year) & Reasons for delaying treatment were assessed with age of the respondents and gender of the respondents.

In relation to age of the respondents, it was found here that $X^2(5) = 78.1, P = .000$ for reasons behind cataract, $X^2(4) = 140.062, P = .000$ for duration of sufferings from cataract (in year) and $X^2(4) = 52.449,$

P=.000 for reasons for delaying treatment. This entailed that there was statistically significant association between (a) age and reasons behind cataract; (b) age and duration of sufferings from cataract (in year) (c) age and reasons for delaying treatment. Moderate strength of association was found between age and reasons behind cataract; and age and reasons for delaying treatment. On the other hand, there was strong strength of association between age and duration of sufferings from cataract (in year).

In relation to gender of the respondents, it was found here that $X^2(5) = 135.287$, $P = .000$ for reasons

behind cataract, $X^2(4) = 42.025$, $P = .000$ for duration of sufferings from cataract (in year) and $X^2(4) = 147.319$, $P = .000$ for reasons for delaying treatment. This entailed that there was statistically significant association between (a) gender and reasons behind cataract; (b) gender and duration of sufferings from cataract (in year) (c) gender and reasons for delaying treatment. Strength of association between gender and reasons behind cataract; gender and reasons for delaying treatment was very strong. But strength of association gender and duration of sufferings from cataract (in year) was found weak.

Table 4: Responses to questions related to Reasons behind Cataract, Duration of sufferings from Cataract (In Year) & Reasons for delaying treatment in relation to Age & Gender of the respondents

Variables	Reasons behind Cataract	Symmetric measures	Duration of sufferings from Cataract (In Year)	Symmetric level	Reasons for delaying treatment	Symmetric level
	X^2 (p-value)	Phi & Cramer's V; (Approximate significance)	X^2 (p-value)	Phi & Cramer's V; (Approximate significance)	X^2 (p-value)	Phi & Cramer's V; (Approximate significance)
Age of the patients in years	$X^2(5) = 78.1$, $P = .000$	.277 & .277; (.000)	$X^2(4) = 140.062$, $P = .000$	.371 & .371; (.000)	$X^2(4) = 52.449$, $P = .000$	.227 & .227; (.000)
Gender of the patients	$X^2(5) = 135.287$, $P = .000$	.364 & .364; (.000)	$X^2(4) = 42.025$, $P = .000$	.203 & .203; (.000)	$X^2(4) = 147.319$, $P = .000$	.380 & .380; (.000)

DISCUSSION

Cataract is projected to experience a distress on health-care systems as the nation's population ages as a result of rising life expectancy [20]. Beyond clinical evaluation, an understanding of the impact of visual impairment or blindness on one's functional ability and quality of life is useful in providing a comprehensive picture of the burden of visual impairment [21].

According to this study, males have a higher prevalence of cataract (53.5%) than females (46.5%). In contrast, the prevalence of cataract was found to be higher in females (55.87% & 56.61%) than in males (44.13% & 43.29%) in studies conducted by GVS Bourne *et al.*, [22] and Sobti *et al.*, [23].

Majority of the patients were illiterate which was noticed for 510 (50.0%) cases followed by primary, high school, graduate and HSC which was observed for 268 (26.3%) cases, 141 (13.8%) cases, 73 (7.2%) cases and 28(2.7%) cases respectively. This finding indicates that illiterate people are more susceptible to cataract. Another study found that people with less education, lower income, and no health insurance had a significantly higher prevalence of cataract [24]. One potential answer is that they are unable to reach eye care services due to lack of knowledge. In some cases, despite the knowledge, potential eye patients cannot visit eye care providers due to high transportation costs resulting from long distances to eye care facilities [25].

Furthermore, the majority of participants who received cataract surgery in the camp were of working age (15 to 64 years). Females who experienced cataract surgery were housewives by profession because the housewife was the most common group in this study, followed by farmers (16.2%, $n = 165$), retirees (11.9%, $n = 121$), and so on. In this study, married people (97.9%, $n = 999$) and people from joint families (83.1%, $n = 848$) had received surgery mostly.

In regards to the religious status, the present study found Muslim patients outnumbered the non-Muslim patient which reflects the current religious dominance of Bangladesh according to the BBS report, 2020 [26]. Patriarchal social system is prevalent in Bangladesh. Thus, it is normal for men to be the head of the household in this country and since our study found more than 90% of households headed by men, it can be said that the findings of our study reflect the prevailing patriarchal social system in this country. The present study found no family history of cataract in 70% of patients, which contradicts some previous studies result [27, 28].

Oliveira and his team conducted a hospital based study about the perception of cataract among cataract patients in 2005 and found most of the patients had blamed "aging" as the causation of cataract which is consistent to our study findings [29]. However, as a percentage, our results are much lower than theirs. Presence of less high educated patients in the current

study may be the possible reason of this result. In the case of the duration of sufferings by cataract, this study found most of the patients were suffering from lowest 1 year to 12 years. In the search for reason of getting delayed treatment of this disease, maximum of patients had pointed out the financial incapacity. Evidence suggest that due to the high cost, people with low income may refrain from performing surgery [25, 30]. As a result, it is suggested that Bangladesh should implement a public health insurance scheme that includes eye health care. In addition, an affordable pricing system for eye care services that reflects the purchasing power of the majority of the community's people may be implemented. To increase surgery uptake, policymakers should allocate significant budgets for eye surgery subsidies in public and private hospitals, and charities or national non-governmental organizations should expand their coverage to meet the eye surgery needs of all low- and middle-income groups in the country.

Another finding of this study revealed that the reasons behind cataract were statistically significant in relation to age and gender. It was also observed that the duration of cataract suffering (in years) was statistically significant in relation to age and gender. Finally, reasons for delaying treatment were noticed to be statistically significant in relation to age and gender.

CONCLUSION

It is concluded that there are more males than females among cataract surgery patients in Bangladesh. Working age people such as 15-64 years and illiterate are more prone to suffer from this disease. This disease was not present in the family member of most of this study's participants and a great number of patients had cited "aging" as the occurrence of cataract. Most of the patient had tendency to receive delayed treatment for more than a year to decade. Financial instability was identified as the barrier for receiving treatment in proper time by most of the participants of this study. It is noticed that age and gender was significantly associated with the diagnosis of cataract and delaying treatment of this disease.

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