

# Pattern of Ocular Diseases among Patients Attending a Geriatric Centre in Ibadan, Sub-Sahara Africa

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## ABSTRACT

**Purpose:** To assess the pattern of ocular diseases among patients attending a geriatric centre in Ibadan, Sub-Sahara Africa.

**Methods:** This was a descriptive cross-sectional hospital based study conducted among patients aged 60 years and above. Four hundred and twenty-seven patients with visual acuity worse than 6/12 attending the clinic were selected and informed consent forms were signed by the respondents. An interviewer administered semi-structured questionnaire was used to obtain information on socio-demographic characteristics, as well as their ocular and medical history. Ocular examination and refraction was carried out on each respondent. Data was analysed using the IBM Statistical Package for Social Sciences (IBM SPSS) software version 20.

**Results:** A total of 427 patients participated in the study. Mean age was 71.6±7.11 years. The commonest ocular abnormalities include cataract (91.6%), refractive error (90.2%) and glaucoma (61.6%). About one third of patients presented with mild visual impairment (37.9%) and blindness (37.7%) for distance vision, while more than three-quarter (88.5%) of respondents had near vision impairment.

**Conclusion:** The prevalence of treatable ocular abnormalities was found to be high among the elderly, with cataract being the commonest. This upward trend of age related eye diseases compounded by existing gaps in eye-care services may continue, if urgent actions are not taken. Therefore, it is important for eye care providers and other stakeholders to provide eye health education and accessible eye care services for the elderly to eliminate these avoidable visual impairment and blindness.

**Keywords:** Elderly; Geriatric; Visual impairment; Blindness; Ocular diseases

## INTRODUCTION

Developments in medicine have led to a major growth in the population of the elderly, with a consequential influence on the health and socio-economic system [1,2]. Owing to the rapidly expanding aged population worldwide, it is estimated that by the year 2050 about 1.2 billion out of the projected 1.5 billion people that will be aged 65 years and above, will reside in today's less developed regions, and this demographic transformation will profoundly affect the health and socio-economic development of all nations [3,4].

The Nigerian National Blindness and Visual Impairment Survey (NNBVIS) survey identified the strong relationship between aging and increasing prevalence of blindness (23.3% among the elderly at ≥ 80 years as compared to 0.8% at 40-49 years) [5]. This finding was also similar to studies done by Adepegba et al. [6] and

Bekibele et al. [7].

The aetiology of visual impairment differs according to sociodemographic characteristics of the population [8]. Preventable causes of blindness like cataract, uncorrected refractive errors, glaucoma remain the commonest causes of visual impairment among the elderly worldwide [9,10], despite various efforts at reducing their burden. Consequently, all these will be leading to a rising trend in the prevalence of blindness in the decades to come, unless collaborative and conscientious efforts are made at challenging these diseases.

Possible contributors to this include co-existing disabling systemic disorders, high costs of seeking healthcare and accompanying dwindling financial status due to retirement. False insight that visual loss is to be expected in later life and also some aged individuals from accessing medical care [11].

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**Received date:** December 12, 2020; **Accepted date:** December 26, 2020; **Published date:** January 02, 2021

**Citation:** Majekodunmi O (2021) Pattern of Ocular Diseases among Patients Attending a Geriatric Centre in Ibadan, Sub-Sahara Africa. J Clin Exp Ophthalmol. S11:002.

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These findings have important implications. First, the economic burden from visual impairment will increase and is expected to double in the next 30 years due to the rapidly aging population [12]. Second, the effect of correctable visual impairment strengthens the benefits of eye care services for older people [13].

Therefore, to ensure that services are available to support their visual needs, data is needed on the pattern of age related eye diseases affecting them for adequate planning of eye care services (i.e., prevention, treatment and rehabilitation). This will reduce the burden of visual impairment and blindness, with subsequent improvement of overall quality of life of the elderly.

## MATERIALS AND METHODS

This was a descriptive cross-sectional study conducted at the Geriatric Outpatient Clinic of the University College Hospital, Ibadan which is an established unit that attend to various health needs of the elderly i.e. individuals 60 years and above.

A sample size of 427 was determined using Leslie-Keish statistical formula [14], in addition to an anticipated non-response rate of 10%. Ethical approval was obtained from the University of Ibadan/University College Hospital Ibadan ethical committee before commencement of the study. Permission was also obtained from the Head of the Geriatric Centre.

Furthermore, written informed consent was obtained from all consecutive patients who met the following eligibility criteria i.e. best corrected visual acuity of worse than 6/12 and agreed to participate in the study. The study was carried out in line with the declaration of Helsinki for studies on human subjects.

Questionnaires in English (with translation to Yoruba) were administered to all participants (depending on their language preference) by a single trained assistant, followed by an ocular examination, completed by the primary investigator. Presenting distance visual acuity of each eye was tested using an illuminated Snellen chart placed at a distance of six meters from the participant, while the near vision was assessed using a Jaeger near chart placed at 33 cm in a well-lit room (with distant correction where applicable).

### Statistical analysis

Data collected was entered and analysed using the IBM Statistical Package for Social Sciences (IBM SPSS) software version 20 (IBM SPSS Inc., Chicago IL, USA).

Summary statistics are presented as proportions for categorical variables, while quantitative variables are presented in frequency tables as means and standard deviation. All test analysis was set at 5% level of significance ( $p < 0.005$ ).

### Operational definitions

**Visual impairment:** Mild Visual impairment was defined as visual acuity  $< 6/12$  to  $6/18$ , Moderate Visual Impairment as  $< 6/18$  to  $6/60$ , Severe Visual Impairment as  $VA < 6/60$  to  $3/60$  and blindness as  $< 3/60$  [15]. Refractive error included myopia,

hypermetropia and astigmatism. Myopia was defined as spherical error of  $-0.50$  D or worse [15,16]. Hypermetropia was defined as spherical error of  $+0.50$  D or worse [15,16]. Astigmatism (minus cylinder format) was defined as a cylindrical error greater than  $0.50$  D [16]. Presbyopia was defined as inability to read N8 with both eyes at a distance 40 cm away from the subject [17]. Cataract was defined as opacification of the crystalline lens and graded using the WHO cataract grading system [18]. Glaucoma diagnosis was defined using International Society of Geographical and Epidemiological Ophthalmology (ISGEO) criteria as vertical cup-disc ratio  $\geq 0.7$  and or cup-disc asymmetry of  $\geq 0.2$  [19]. Age Related Macula Degeneration (ARMD) was classified using the International Classification and Grading System for Age-Related Maculopathy and Age Related Macula Degeneration [20].

## RESULTS

A total of 427 consenting respondents attending the Chief Tony Anenih Geriatric Centre participated in this descriptive cross-sectional hospital based study. The age distribution was from 60 to 91 years (mean age of  $71.6 \pm 7.11$  years). More than half of the respondents were in their 6th decade of life, with about one tenth of them above 80 years of age. The age and sex distribution of all respondents is shown in Figure 1, while other socio demographic distribution of the study participants is presented in Table 1.

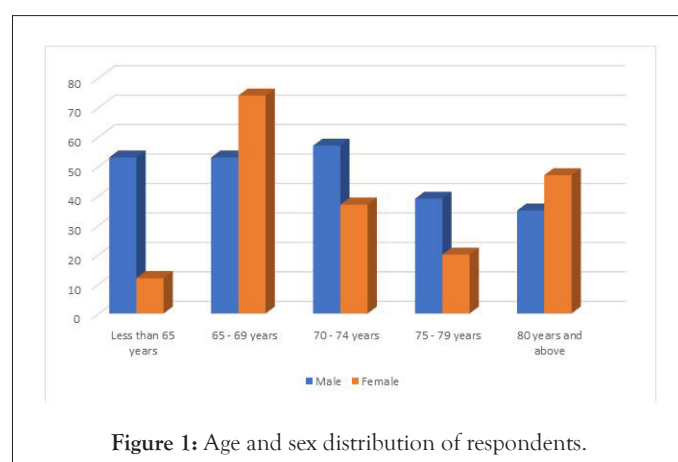


Figure 1: Age and sex distribution of respondents.

Table 1: Other socio demographic characteristics.

	Frequency	Percentage
Highest level of education		
Nil	90	21.1
Primary	118	27.6
Secondary	97	22.7
>Secondary	122	28.6
Total	427	100
Marital status		
Married/living together	297	69.6

Separated/widowed	130	30.4
Total	427	100
Religion		
Christian	288	67.4
Islam	139	32.6
Total	427	100
Occupation		
Farmer	28	6.6
Skilled labour	9	2.1
Professional	8	1.9
Unemployed	29	6.8
Retired	221	51.8
Others	132	30.9
Total	427	100

More than half of the respondents were males 237 (55.5%). About half of the respondents 219 (51.3%) had at least secondary education with only 21.1% illiteracy level. Majority of the respondents 297 (69.6%) were married/living together, while more than half of the respondents were retired 221(51.8%). More than half of the respondents had a history of using eye drops (53.9%), while about 49% of the respondents had a history of wearing spectacles as shown in Table 2.

**Table 2:** Ocular history.

	Yes	No
Spectacle wear	210 (49.2)	217 (50.8)
Trauma to the eye	20 (4.7)	407 (95.3)
History of couching	Nil	Nil
History of past ocular surgery	93 (21.8)	334 (78.2)
History of chronic use of eye drops	230 (53.9)	197 (46.1)

Respondents' medical history included hypertension 260 (60.9), diabetes mellitus 79(18.5%) and other systemic illness 122 (28.6%) as shown in Table 3. Distance visual acuity assessment showed that about one third of the patients had moderate visual impairment at presentation, while more than three-quarter had impaired near vision (Table 4). The burden of ocular disease among respondents showed that cataract (91.6%) and uncorrected refractive errors (90.2%) were the most prevalent ocular conditions (Table 5) and Figures 2 and 3 shows the presence of other ocular diseases in each eye.

**Table 3:** Medical history.

	Frequency	Percent
Yes	260	60.9
No	163	38.2
Not sure	4	0.9
Are you diabetic		

Yes	79	18.5
No	348	81.5
Presence of other systemic illness		Nil
Yes	122	28.6
No	305	71.4
Name of other systemic illness (N=122)		
Arthritis	51	41.8
Dyslipidaemia	26	21.3
Peptic ulcer disease	18	14.8
Benign prostatic hyperplasia	12	9.8
Parkinson's disease	8	6.6
Psychosomatic disorder	8	6.6
Hepatitis	7	5.7
Presbycusis	4	3.3
Asthma	4	3.3
Do you receive any specialist care		
Yes	305	71.4
No	122	28.6

**Table 4:** Visual impairment.

	Right Eye N (%)	Left Eye N (%)	Both eyes
Distant VA			
>6/18	20 (4.7)	7 (1.6)	-
6/18-6/60	162 (37.9)	177 (41.5)	267 (62.5)
6/60-3/60	84 (19.7)	74 (17.3)	88 (20.6)
<3/60	161 (37.7)	169 (39.6)	72 (16.9)
Visual Acuity Pinhole			
>6/18	23 (5.4)	18 (4.2)	-
6/18-6/60	202 (47.3)	192 (45.0)	-
6/60-3/60	55 (12.9)	46 (10.8)	-
<3/60	147 (34.4)	171 (40.0)	-
VA Glasses			
>6/18	19 (4.4)	7 (1.6)	-
6/18-6/60	127 (29.7)	135 (31.6)	-
6/60-3/60	34 (8.0)	19 (4.4)	-
<3/60	37 (8.7)	48 (11.2)	-
Near VA			
≥ N8	-	-	49 (11.5)
<N8	-	-	378 (88.5)

**Table 5:** Burden of ocular disease among patients.

	Present	Absent
Cataract	391 (91.6)	36 (8.4)
Refractive errors	385 (90.2)	11 (2.6)
Glaucoma	263 (61.6)	164 (3.4)
ARMD	33 (7.7)	394 (92.3)

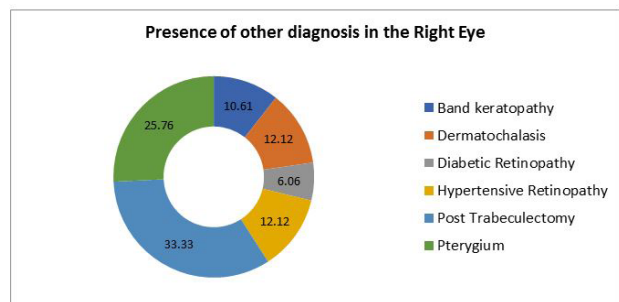


Figure 2: Presence of other diagnosis (right eye).

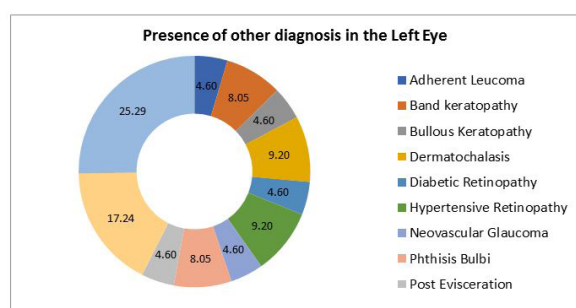


Figure 3: Presence of other diagnosis (left eye).

Table 6 shows the relationship between eye diseases and socio demographic characteristics. Cataract was significantly associated with age, educational level, marital status, religion and occupation ( $p < 0.05$ ), while refractive errors were significantly associated with gender and educational level of respondents.

## DISCUSSION

In this study, male participants (55.5%) had a slight preponderance over the female participants (44.5%) which was different to the findings of the Projector VER study [21] (male: 38.7%, female: 61.3%) and Pakistan National Blindness and Visual Impairment Survey [22] (male 46.9%, female 53.1%). The reasons for this finding may include: men are more likely to be literate and have access to information about health services; it is also possible that in this environment, elderly women may lack the needed social support as well as financial resources to seek eye care. All these therefore suggests a better health seeking attitude of males than females in this environment. More than half of the respondents were retired with a possibility of depleting financial resources. This could have undesirable effects on their health seeking abilities due to the financial constraints they encounter, in a fee-based geriatric-service such as the one used in this study. In addition, due to competing financial needs, many patients weigh the opportunity cost of seeking eye care in favour of more pressing needs. This often contributes to their late presentation.

Treatable and preventable causes of visual impairment accounted for the majority of ocular morbidities among the elderly in this study. Despite the previous report of the Nigeria National Blindness and Visual Impairment Survey [5] in which, 84% of blindness was found to be avoidable, it is still disheartening that people are still presenting with preventable visual impairment/blindness 15 years down the line. This finding suggests that, if nothing is done to alleviate the health needs of the elderly, the burden of ocular diseases among this subset of the Nigerian population will continue to rise unabated, with the changing demographics of the Nation.

Table 6: Bivariate analysis showing association between eye disease and socio demographic characteristics.

	4			4			4			4		
	Yes	No	$\chi^2$ , p	Yes	No	$\chi^2$ , p	Yes	No	$\chi^2$ , p	Yes	No	$\chi^2$ , p
Sex												
Female	102 (53.7)	88 (46.3)	9.050, 0.003	182 (100)	0 (0)	9.622, 0.002	174 (91.6)	16 (8.4)	0.00, 1.00*	16 (.4)	174 (91.6)	0.230, 0.716
Male	161 (67.9)	76 (32.1)		203 (94.9)	11 (5.1)		217 (91.6)	20 (8.4)		17 (7.2)	220 (92.8)	
Age												
<65 years	37 (56.9)	28 (43.1)	17.949, 0.001	61 (100)	0 (0)	9.275, 0.055	61 (93.8)	4 (6.2)	14.331, 0.006	0 (0)	65 (100)	61.220, <0.001
65-69 years	63 (49.6)	64 (50.4)		120 (94.5)	7 (5.5)		119 (93.7)	8 (6.3)		1 (0.8)	126 (99.2)	
70-74 years	59 (62.8)	35 (37.2)		90 (95.7)	4 (4.3)		90 (95.7)	4 (4.3)		24 (25.5)	70 (74.5)	
75-79 years	46 (78.0)	13 (22.0)		45 (100)	0 (0)		47 (79.7)	12 (20.3)		0 (0)	59 (100)	
>80 years	58 (70.7)	24 (29.3)		69 (100)	0 (0)		74 (90.2)	8 (9.8)		8 (9.8)	74 (90.2)	
Highest Level of education												
Nil	61 (67.8)	29 (32.2)	2.168, 0.538	85 (100)	0 (0)	28.690, <0.001	78 (86.7)	12 (13.3)	15.616, 0.001	17 (18.9)	73 (81.1)	38.692, <0.001
Primary	71 (60.2)	47 (39.8)		101 (90.2)	11 (9.8)		110 (93.2)	8 (6.8)		0 (0)	118 (100)	
Secondary	56 (57.7)	41 (42.3)		81 (100)	0 (0)		97 (100)	0 (0)		0 (0)	97 (100)	
>Secondary	75 (61.5)	47 (38.5)		118 (100)	0 (0)		106 (86.9)	16 (13.1)		16 (13.1)	106 (86.9)	
Marital status												

Married/ living together	188 (63.3)	109 (36.7)	1.202, 0.273	259 (97.4)	7 (2.6)	0.064, 0.800	281 (94.6)	16 (5.4)	11.706, 0.001	25 (8.4)	272 (91.6)	0.650, 0.420
Separated/ widowed	75 (57.7)	55 (42.3)		126 (96.9)	4 (3.1)		110 (84.6)	20 (15.4)		8 (6.2)	122 (93.8)	
Religion												
Christian	171 (59.4)	117 (40.6)	1.839, 0.175	256 (97.3)	7 (2.7)	0.039, 0.843	272 (94.4)	16 (5.6)	9.475, 0.002	33 (11.5)	255 (88.5)	17.261, <0.001
Islam	92 (66.2)	47 (33.8)		12 (97.0)	4 (3.0)		119 (85.6)	20 (14.4)		0 (0)	139 (100)	
Occupation												
Farmer	20 (71.4)	8 (28.6)		22 (100)	0 (0)		28 (100)	0 (0)		0 (0)	28 (100)	
Skilled labour	7 (77.8)	2 (22.2)		9 (100)	0 (0)		9 (100)	0 (0)		1 (11.1)	8 (88.9)	
Professional	0 (0)	8 (100)	22.934, <0.001	4 (100)	0 (0)	6.166, 0.290	4 (50.0)	4 (50.0)	26.718, <0.001	0 (0)	8 (100)	31.047, <0.001
Unemployed	25 (86.2)	-13.8		29 (100)	0 (0)		29 (100)	0 (0)		0 (0)	29 (100)	
Retired	133 (60.2)	88 (39.8)		204 (98.1)	4 (1.9)		205 (92.8)	16 (7.2)		8 (3.6)	213 (96.4)	
Others	78 (59.1)	54 (40.9)		117 (94.4)	7 (5.6)		116 (87.9)	16 (12.1)		24 (18.2)	108 (81.8)	

The increased burden of ocular diseases among the elderly may also be associated with the neglect they suffer, due to the false conviction that blindness is linked with old age [11]. This erroneous belief encourages already impoverished families and individuals to neglect early signs of visual impairment in ignorance. They also neglect to treat other co-existing systemic diseases as well. Finally, the out-of-pocket payment structure of the Nigerian health care system, also threatens the household's ability to obtain needed services.

The three commonest ocular diseases found among the respondents were cataract, refractive errors and glaucoma with a prevalence of 91.6%, 90.2% and 61.6% respectively. This is similar to findings in the Nigeria National Blindness and Visual Impairment Survey [5] and The Botucatu Eye Study [23] This reveals that the elderly still suffer from needless visual impairment and blindness, despite reports from earlier studies disclosing same. Also, it further reiterates the need to step-up efforts to curb this menace before it overwhelms the geriatric population, their caregivers and the already fragile health system.

In addition to the high burden of preventable visual impairment and blindness among this aging population, our study participants also have co-existing systemic diseases like hypertension (60.9%) and diabetes mellitus (18.5%). Also, 122 respondents had other systemic diseases like arthritis (41.8%), dyslipidaemia (21.3%) and peptic ulcer disease (14.8%). Presence of these co-existing systemic diseases in addition to blindness/visual impairment will contend for their attention and dwindling financial resources, further worsening their overall disability. This has been supported by previous studies [24,25].

## CONCLUSION

This study has demonstrated that there is still a high prevalence of unavoidable blindness among the elderly at the Geriatric centre of the University College Hospital Ibadan. Cataract, uncorrected refractive error and glaucoma accounted for the majority of

ocular morbidity in this study and these ocular diseases are well known to negatively affect the quality of life, thereby worsening disability.

Health education and campaigns about the importance and benefits of seeking eye care, in a timely manner, are necessary to improve the health-seeking behaviour of this elderly population. It is also necessary to pay close attention to primary prevention and early diagnosis of common eye diseases among the elderly, and to improve access to geriatric eye services. This will contribute to the elimination of avoidable blindness and improvement in the overall quality of life of the elderly population.

## REFERENCES

1. Gurav R, Kartikeyan S. Problems of geriatric population in an urban area. *Bombay Hospital J.* 2002;44(1):47-51.
2. Mahajan B, Gupta M. *Text Book of Preventive and Social Medicine.* 2nd ed. New Delhi, India, Jaypee;1995:134-135.
3. Kinsella KG, Phillips DR. Global aging: The challenge of success. *Population Bulletin.* 2005;60(1):5-42.
4. Bongaarts J, Zimmer Z. Living arrangements of older adults in the developing world an analysis of demographic and health survey household surveys. *J Gerontol B Psychol Sci Soc Sci.* 2002;57(3):S145-S157.
5. Kyari F, Gudlavalleti MV, Sivsubramaniam S, Gilbert CE, Abdull MM, Entekume G, et al. Prevalence of blindness and visual impairment in Nigeria: The national blindness and visual impairment survey. *Invest ophthalmol Vis Sci.* 2009;50(5):2033-2039.
6. Adepegba O, Akinsola F, Akinfemiwa O. Ocular morbidity in residents of support homes in four locations in nigeria. *J Clin Sci.* 2006;6(2):35.
7. Bekibele CO, Gureje O. Self-reported visual impairment and impact on vision-related activities in an elderly Nigerian population: report from the Ibadan study of ageing. *Ophthalmic Epidemiol.* 2008;15(4):250-256.



8. Hyman LWS, Connell AMS, Schachat A, Nemesure B, Hennis A, Leske MC, et al. Prevalence and causes of visual impairment in the Barbados eye study. *Arch Ophthalmol*.2001;108(10):1751–1756.
9. Pascolini D, Mariotti SP. Global estimates of visual impairment: 2010. *Brit J Ophthalmol*. 2011;bjophthalmol-2011-300539.
10. Resnikoff S, Pascolini D, Etya'ale D, Kocur I, Pararajasegaram R, Pokharel GP, et al. Global data on visual impairment in the year 2002. *Bull World Health Organ*.2004;82(11):844-851.
11. Landes R, Popay J. 'My sight is poor, but I'm getting on now': The health and social care needs of older people with vision problems. *Health Soc Care Community*.1993;1(6):325-335.
12. Foran S, Wang JJ, Rochtchina E, Mitchell P. Projected number of Australians with visual impairment in 2000 and 2030. *Clin Experiment Ophthalmol*.2000;28(3):143-145.
13. Chia EM, Wang JJ, Rochtchina E, Smith W, Cumming RR, Mitchell P, et al. Impact of bilateral visual impairment on health-related quality of life: The blue mountains eye study. *Invest ophthalmol Vis Sci*.2004;45(1):71-76.
14. Kish L. Survey sampling. New York: J Wiley Sons.1965;643:16.
15. Ezelum C, Razavi H, Sivasubramaniam S, Gilbert CE, Murthy GVS, Entekume G, et al. Refractive error in Nigerian adults: Prevalence, type, and spectacle coverage. *Invest ophthalmol Vis Sci*.2011;52(8):5449-5456.
16. Hashemi H, Rezvan F, Beiranvand A, Papi OA, Yazdi HH, Ostadimoghaddam H, et al. Prevalence of refractive errors among high school students in Western Iran. *J Ophthal Vis Res*.2014;9(2):232-239.
17. Patel I, West SK. Presbyopia: Prevalence, impact, and interventions. *Community Eye Health*.2007;20(63):40-41.
18. Thylefors B, Chylack Jr L, Konyama K, Sasaki K, Sperduto R, Taylor HR, et al. A simplified cataract grading system. The WHO Cataract Grading Group. *Ophthalmic Epidemiol*.2002;9(2):83-95.
19. Foster PJ, Buhrmann R, Quigley HA, Johnson GJ. The definition and classification of glaucoma in prevalence surveys. *Br J Ophthalmol*.2002;86(2):238-242.
20. Bird A, Bressler N, Bressler S, Chisholm IH, Coscas G, Davis MD, et al. An international classification and grading system for age-related maculopathy and age-related macular degeneration. *Surv Ophthalmol*.1995;39(5):367-374.
21. Broman AT, Munoz B, Rodriguez J, Sanchez R, Quigley HA, Klein R, et al. The impact of visual impairment and eye disease on vision-related quality of life in a Mexican-American population: Proyecto VER. *Invest Ophthalmol Vis Sci*.2002;43(11):3393-3398.
22. Jadoon MZ, Dineen B, Bourne RR, Shah SP, Khan MA, Johnson GJ, et al. Prevalence of blindness and visual impairment in Pakistan: The Pakistan national blindness and visual impairment survey. *Invest Ophthalmol Vis Sci*.2006;47(11):4749-4755.
23. Schellini SA, Durkin SR, Hoyama E, Hirai F, Cordeiro R, Casson RJ, et al. Prevalence and causes of visual impairment in a Brazilian population: The Botucatu Eye Study. *BMC Ophthalmol*.2009;9(1):1.
24. Sinclair AJ, Bayer AJ, Girling AJ, Woodhouse K. Older adults, diabetes mellitus and visual acuity: A community-based case-control study. *Age Ageing*.2000;29(4):335-339.
25. Smeeth L, Iliffe S. Effectiveness of screening older people for impaired vision in community setting: Systematic review of evidence from randomised controlled trials. *BMJ*.1998;316(7132):660-663.