



Prevalence of Age-Related Cataracts Among Patients Utilizing Eye Services in Cross River State Eye Care Programme, Calabar, Nigeria

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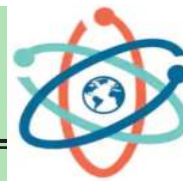
Abstract

Background: Cataract is the leading cause of blindness worldwide. Its prevalence in the area of study needs to be assessed due to the unawareness of older adults, who need to identify the risk factors and access to cataract services.

Aims: The study aimed to determine the prevalence of age-related cataracts between 2019 and 2022 among patients attending the Cross River State Eye Care clinic in Calabar, Nigeria.

Methods: The study utilized a retrospective research design. The case notes of 200 patients aged 50 years and above who attended the clinic during the period under study were reviewed. Relevant data was extracted from the patients' folders into a checklist and was analysed using descriptive statistics (frequency and percentage). Chi-square was used to test the hypothesis.

Findings: The result of the data analysed showed that most of the study participants (41%) were in the age range of 71 years and above. There were more females (51%) than males in the study. The prevalence of cataracts was 68%. The prevalence rate was higher in females (70.6%) than males



(65.3%). A chi-square analysis of the hypothesis showed that the calculated X^2 value of 25.92 is far greater than the critical X^2 value of 5.99 at a 0.05 level of significance. The null hypothesis was therefore rejected, implying a significant relationship between gender and age-related cataracts.

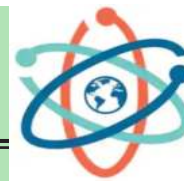
Conclusion: The high prevalence of cataracts recorded in this study highlights the need for nurses to ask about the state of vision of their patients during the initial assessment of all patients on first contact with the health facility. If this is done, patients who complain of decreased vision can be arranged to be evaluated accordingly.

Recommendation: Based on these findings, eye screening, health promotion, and health education on the availability and utilization of cataract services should be considered a routine part of healthcare services.

Keywords: Age-Related Cataract, Gender, Prevalence, Risk factors

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Background

One of the most important causes of visual impairment worldwide is cataracts. It is the leading cause of blindness all over the world (Steinmetz et al., 2021). The World Health Organization (WHO) reported that not less than 65.2 million people in the world have moderate-to-severe distance visual impairment or blindness due to cataract^s (WHO, 2019). Cataract is the most common cause of visual impairment and blindness in adults aged 50 years and above and was estimated to be responsible for 78,785,970 of moderate-to-severe visual impairment and 15,175,052 blindness in adults aged 50 years and above (Steinmetz et al., 2021). Obviously, age-related cataract poses an important public health problem because it impacts negatively on the economic activities of older people, thereby hampering their economic independence (Amedo et al., 2016).

Cataracts that occur because of increased aging are referred to as age-related cataracts. Therefore, age is a non-modifiable risk factor for cataracts (Garg et al., 2020). Untreated cataract results in blindness, predisposing older adults with the condition to a greater risk of becoming blind. The prevalence of blindness generally increases with age because the incidence of blinding eye diseases such as age-related cataracts and glaucoma rises with increasing age (WHO, 2019). It is, therefore, not uncommon for age-related cataracts to coexist with other age-related eye diseases, such as age-related macular degeneration, a common cause of irreversible loss of vision (Martínez-Velasco et al., 2019). Age-related cataract, however, remains the most common cause of blindness among older adults (Na et al., 2022).

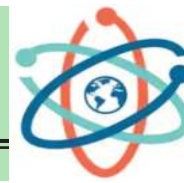
Besides age, which is non-modifiable, various assumed modifiable risk factors are associated with cataracts. They include diabetes mellitus, hypertension, exposure to ultraviolet light, body mass index (BMI), smoking, use of certain drugs (such as corticosteroids), and socioeconomic status (Garg et al., 2020). Increasing age, however, remains the single most important risk factor for cataracts (Garget et al., 2020; Singh et al., 2019).

The prevalence of vision impairment in low- and middle-income countries like Nigeria has been estimated by the WHO to be four times higher than in high-income regions (WHO, 2019). Additionally, as low- and middle-income countries undergo the demographic transition toward an aging population, the number of people with age-related cataracts will increase even more (Garg et al., 2020). The prevalence and risk factors for age-related cataracts in areas where such studies have been conducted may differ significantly from what is tenable in Calabar due to the following reasons. Firstly, there may be differences in the age distribution of populations between Calabar and other areas. Secondly, there may be geographical variations in exposure to risk factors for age-related cataracts. Thirdly, access to cataract surgical services may vary based on location. This will impede the generalizability of such data to Calabar. Therefore, it is pertinent that a study on the prevalence of age-related cataracts be conducted in Calabar to establish its unique attributes to the disease's occurrence.

Objectives and Hypothesis

The specific objective is to:

- To determine the prevalence of age-related cataracts in patients attending the Cross River State Eye Care clinic in Calabar, Nigeria.



The study's hypothesis is:

- There is no significant relationship between gender and age-related cataracts in Eye Care Clinic, Calabar.

Theoretical Framework

Framework of access to health care

This framework was developed in 2013 by Levesque and colleagues to conceptualize access to health care with the view of describing broad dimensions and determinants that interplay between demand and supply side factors and enabling the practice of access to health care as well as obtaining and benefitting from the health care services. They defined access as “the opportunity to reach and obtain appropriate health care services in situations of perceived need for care” (Levesque et al. 2013).

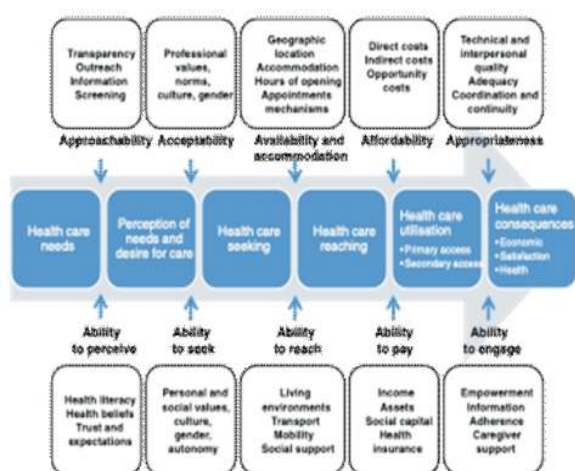


Figure 1: A conceptual framework of access to health care (Levesque et al., 2013).

Dimensions of Access to Health Care Framework

Five dimensions of accessibility of services were conceptualized in this framework (Fig. 1). These are 1) Approachability; 2) Acceptability; 3) Availability and

Accommodation; 4) Affordability; 5) Appropriateness. Five matching abilities of individuals interact with the dimensions of accessibility to create access. These dimensions of abilities are shown in the lower part of Figure 1 to include: 1) Ability to perceive; 2) Ability to seek; 3) Ability to reach; 4) Ability to pay; 5) and Ability to engage (Levesque et al. 2013).

Application of the Framework of Access to Health Care to present study.

This study focuses on the prevalence of age-related cataracts. Exposure to risk factors for a disease and accessing treatment for the disease will act synergistically to increase the prevalence of the disease, whereas accessing the needed treatment in a timely manner will result in a decreased prevalence. The enablers to accessing health care services are all captured in the Framework of Access to Health Care, thus making this patient-centered framework the best conceptual framework of choice for the present study. The framework highlights the need to evaluate strategies to improve access to eye care services.

Methods

Research Design

This research utilized a retrospective study design to determine and identify the prevalence of age-related cataracts among patients who accessed eye care services between January 2019 and June 2022 at the Cross River State Eye Care Programme Clinic, Calabar, Nigeria.

Setting for the Study

The Cross River State Eye Care Programme (CRSECP) clinic in Calabar was used for the study because it is a high-volume



eye care centre. The hospital is a secondary eye care facility located in Calabar Municipal within Calabar Metropolis, the capital city of Cross River State. Calabar has an area of 406 km² and a population of 371,022 at the 2006 census (Independent National Electoral Commission (INEC), 2015).

The study population comprised men and women aged 50 years and above who attended the eye clinic between January 2019 and June 2022, which is about 2,000, as shown by the clinic records. Data was collected from the patients' health records (folders) using a checklist designed for the study.

From the population of 2,000 patients, a sample size of 200 patients' case notes was drawn and calculated using the systematic sampling technique expressed by Bujang (2021) in the formula below.

$$K = N/n$$

Where K = Sample interval

n = Sample Size

N = Population Size

Substituting the numbers, therefore;

$$10 = 2000/n$$

$$10n = 2000$$

$$n = 2000/10$$

Thus, the sample size for this study was two hundred patients' health records (folders). Therefore n = 200.

The selection of patients' health records for the study was made by systematic sampling, which is a type of probability sampling method in which sample elements from a larger population are selected from a random starting point, with selection of subsequent elements being done at a fixed and periodic interval – the sampling interval (Webb & Bain, 2017). The process involved the following steps: a list of all adults aged 50 years and above who attended the

facility during the study period, about 2000, was obtained from the clinic records constituting the sampling frame. The researchers randomly selected a starting point by balloting and, from there, selected every 10th interval (the calculated sampling interval) of the population to include in the sample. This continued until the sample size, which was 200 patients' health records, was selected for the study. The researchers developed the checklist used for data collection in line with the study's objectives. The checklist was designed to make it easier to collect and calculate data regarding the prevalence of cataracts.

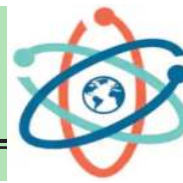
Ethical approval was given by Directorate of Eye Care Services of the Cross River State Ministry of Health to conduct the study in the Cross River State Eye Care Clinic. A clear explanation of the research objectives was provided to the centre's director. No Personally Identifiable Information was involved in the data collection checklist, as patients were coded as serial numbers.

Results

The prevalence estimates were calculated and presented using pie charts and bar charts. Descriptive statistics (frequencies and proportions) were used to summarize variables and are presented using tables.

Table 1 Socio-demographic characteristics of study participants (N = 200)

Variable	Frequency (N=200)	Percentage (100.0%)
Sex		
Male	98	49
Female	102	51
Age group/years		
50-60	55	27.5
61-70	63	31.5
>70	82	41
Marital status		
Single	1	0.5
Married	77	38.5
Divorced/separated	2	1
Widowed	120	60
Religion		
Christianity	185	92.5
Islam	2	1
Traditional	4	2
Others*	9	4.5



Tribe		
Efik	41	20.5
Ibibio	44	22
Ibo	59	29.5
Yoruba	7	3.5
Ekoi	33	16.5
Others**	16	8
Highest level of education		
Non-formal education	46	23
Primary	31	15.5
Secondary	45	22.5
Tertiary	58	29
Vocational	20	10
Occupation		
Self-employed	28	14
Civil/public servant	32	16
Petty trading	33	16.5
Farming	42	21
Pensioner	65	32.5

Others* include Eckankar, Grail movement, Atheist
Others** include Anang, Andoni, Igalla, Ijaw, Ogoni and Oron

Table 1 shows that there were more females than males in the study sample (102/200, 51%). A majority of the study participants were in the age range 71 (82/200, 41%). Over one-half of the study population (60%) were widowed, while about 9 out of every 10 participants belonged to the most popular religion in southern Nigeria: Christianity. Just below a quarter (23%) of those surveyed had no form of education, while 29% had tertiary education. About a third (32.3%) of the participants were pensioners (Table 1).

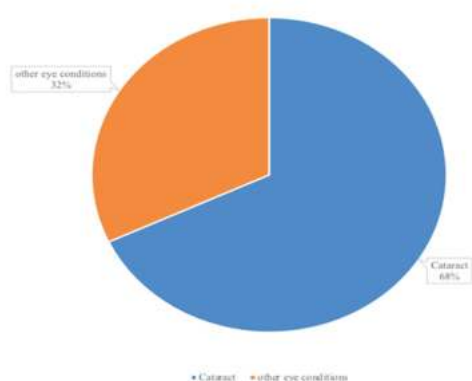


Figure 2: Prevalence of cataracts in the study participants during the period under survey, 2019-2022 (N = 200).

One hundred and thirty-six out of 200 of the

study participants had diagnoses of cataracts. This gives a prevalence of $136/200 = 0.68$ or 68% in the study population.

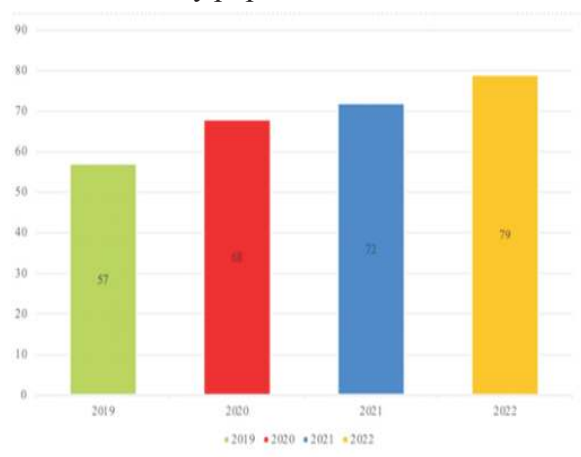


Figure 3: Cataract prevalence in percentage by year during the period under survey (N=200)

The bar chart above (Figure 3) shows a steady rise in the prevalence of cataracts for each subsequent year. Thirty-two of the 56 participants surveyed for the year 2019 had diagnoses of cataracts, giving a prevalence of $32/56 = 0.57$ or 57%. In 2020, thirty-nine out of the 57 participants had diagnoses of cataracts, resulting in a prevalence of $39/57 = 0.68$ or 68%. Forty-two participants out of 58 had cataracts in 2021, culminating in a prevalence of $42/58 = 0.72$ or 72%. Regarding 2022, twenty-three participants of the 29 surveyed had cataracts as their diagnoses, giving a prevalence of $23/29 = 0.79$ or 79%.

Test of Hypotheses

The null hypothesis states no significant relationship exists between gender and age-related cataracts in Eye Care Clinic, Calabar. In testing this hypothesis, the chi-square was adopted, and the result of the analysis is presented in Table 2

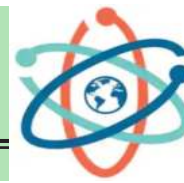


Table 2: Summary of chi-square analysis on the relationship between gender and age-related cataracts (N = 200)

Cataract	Observed (O)	Expected (E)	O-E	(O-E) ²	(O-E) ² /E	Df	Critical X ²
YES	136	100	36	1296	12.96	2	5.99*
NO	64	100	-36	1296	12.96		
Total					25.92		

*significant at 0.05 probability level.

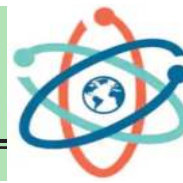
The result in Table 2 shows that the calculated χ^2 value of 25.92 is far greater than the critical χ^2 value of 5.99 at a 0.05 level of significance with 2 degrees of freedom. Based on this result, the null hypothesis was rejected, while the alternate hypothesis was retained. This implies that there is a significant relationship between gender and age-related cataracts among patients attending the Eye Care Clinic, Calabar.

Discussion

The prevalence of cataracts in this study was 68%, with a higher prevalence in females (70.6%) than males (65.3%). An earlier hospital-based study which was conducted on adults aged 40 years and above in Kano, Nigeria, reported a prevalence of 87.7% for unilateral cataracts, with more females (275) than males (212) presenting with cataracts (Kurawa & Abdu, 2017). Another study conducted within the same period in Ekiti, Nigeria, on participants with a mean age of 64.8 ± 16.5 years found a uniocular cataract blindness prevalence of 69.7% (Fadamiro & Ajite, 2017), which is similar to the finding in this study. Unilateral cataract blindness prevalence of 8.9% with a higher prevalence in females (10.7%) than males (7.4%) was also found in a retrospective study that was conducted in Wurno health zone of Sokoto State, Nigeria, on adults aged 50 years and above (Muhammad et al. 2017)). A previous study in Tierp, Sweden, on participants aged 65-74 years found a cataract prevalence of 31.5%, with a higher prevalence in women (35.2%) compared to men (26.2%) (Hugosson &

Ekström, 2021). In Debre Markos, northwest Ethiopia, a prevalence of 57% was reported among patients aged 40 years who attended a tertiary eye clinic (Wale et al. 2020). Despite the varying differences reported by these various studies, they all found a higher cataract prevalence in females compared to men, which is similar to the finding in the current study. The higher cataract prevalence in females may suggest greater exposure of females to risk factors that predispose them to the development of cataracts. The varying differences in the prevalence of cataracts among the different studies may be due to variations in the examination methods and diagnostic criteria used. For example, the study definition of cataracts may be based on a certain level of visual acuity, which may vary widely among studies. Studies that set lower visual acuity levels may, therefore, report higher prevalence than studies whose definition of cataract is based on higher visual acuity (Taryam et al. 2020).

Another interesting finding in this study is the upward trend in the prevalence of cataracts, with a gradual increase in cataract prevalence for each successive year. This may be explained by the fact that the Tulsi Chanrai Foundation, an Indian non-government organization that provides cataract surgeries for the Cross River State Eye Care Clinic in Calabar, embarks on regular eye camps to screen patients for cataracts. Such patients are then transported to Calabar for cataract surgeries. Additionally, blind patients who have had their sight restored from cataract surgery may also direct other people in their communities with cataracts to the centre to benefit from cataract surgery. This may contribute to the rising trend in the prevalence of cataracts during the survey period as well as the relatively high prevalence of cataracts found in this study.



The higher prevalence of cataracts (68%) than other eye conditions (32%) that was found in this study could be explained by the fact that the focus of the Tulsi Chanrai Foundation is primarily on cataracts. Their regular eye camps are organized mainly to screen patients for cataract surgeries. Many of the other eye conditions may, therefore, end up in other eye care facilities, such as private eye clinics and the University of Calabar Teaching Hospital eye clinic, or even remain at home untreated.

Implication of the Study Findings to Nursing

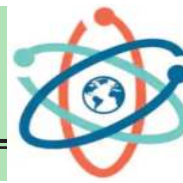
The findings from this study have important nursing implications. The high prevalence of cataracts found in this study highlights the need for nurses to ask about the state of vision of their patients while caring for them. If this is done, patients who complain of decreased vision can be arranged to be evaluated by eye health staff.

Acknowledgments

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