

Factors associated with visual impairment among patients attending eye care services at the eye clinic in Masaka Regional referral hospital, Uganda. A cross-sectional study.

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Abstract

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Background:

Visual impairment among patients attending eye care services is commonly caused by conditions like refractive errors, cataracts, and glaucoma. It often develops gradually and may go unnoticed without regular checkups. This study aimed to identify factors associated with visual impairment among patients attending eye care services at Masaka Regional Referral Hospital.

Methodology:

This was a descriptive cross-sectional study design that employed a quantitative method of data collection.

Results:

50 respondents participated in this study, 27(58.33%) females and 24(41.67%) males, 15.55% were between 18 and 25 years, 18.33% were between 26 and 40 years, 24.45% were between 41 and 60 years, while 41.67% were above 60 years. The prevalence of VI increases with increasing age, with adults above 60 years worst affected (41.67%). The prevalence of VI was greatest among illiterate patients (33.33%) and decreased with increased level of education. Increasing age, history of eye trauma (30.56%), and family history of chronic eye diseases (26.38%) were significant factors associated with visual impairment. Cataract was the leading cause of VI (33.33%), followed by uncorrected refractive errors (29.17%), glaucoma (20.83%), while diabetic retinopathy caused the fewest cases. (6.94%).

Conclusion:

In MRRH, the prevalence of VI among patients is high, with the majority of the cases being correctable.

Recommendations:

There is a need for the government and policymakers to employ more eye care workers to detect and manage irreversible and reversible causes of VI.

Keywords: Visual Impairment, Eye Care Services, Eye Clinic, Masaka, Regional Referral Hospital.

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Background of the study

Visual impairment refers to presenting distance visual acuity worse than 6/18 in the best eye. It remains a global challenge that greatly affects the mobility, social participation, and quality of life of people. (Natnael Lakachew Assefa et al., 2020)

The leading causes of visual impairment and blindness are uncorrected refractive errors and cataracts. The majority of people with visual impairment and blindness are over the age of 50 years; however, vision loss can affect people of all ages. (WHO,2022) Therefore, patients with visual impairment need to be found as early as possible so that they can be examined, treated, referred, or rehabilitated.

Uganda, just like other developing countries, is faced with a problem of insufficient eye health care personnel with adequate knowledge to tackle conditions like refractive errors, cataracts, glaucoma, and age-related macular degeneration, which are the major causes of visual impairment and blindness.

This has prompted the researcher to conduct a study on the factors associated with visual impairment among

patients attending eye care services at Eye Clinic in MRRH, Uganda.

Methodology

Study design

In this study, the candidate employed a descriptive cross-sectional study design, which involved both qualitative and quantitative methods to determine the factors associated with VI among patients attending eye care services at Eye Clinic in MRRH in Masaka district. This design was used due to the short time frame of the study, so the research took place at a point in time.

Study area

The study was carried out in Masaka City at Masaka Regional Referral Hospital.

Study population

The study population was the patients in Masaka City and neighboring districts attending Eye Care services at MRRH. Both males and females of all ages.

Sample Size Determination.

The sample size was calculated using the method below, according to Muto Samuel (2004).

Sample size= $D \times H / T$ Where:

D-number of days available for data collection

H-number of hours per day

T-total time which is spent on each event

D=30 days H=1 hours T=40 minutes (0.6 hrs.)

$(30 \times 1) / 0.6 = 50$ patients

The researcher will use 50 patients for the study.

Sampling technique

A simple random sampling technique was used in the study.

Sampling procedure

The researcher used simple random sampling on all the patients affected by visual impairment who came to attend eye care services at Eye Clinic of MRRH, and any other person who had relevant information and was in MRRH. The researcher and his assistants assigned all the patients a unique number. The numbers were written on small pieces of paper, then folded and put in a basin and thoroughly mixed. The patients were then requested to pick up the papers and open them. Those who picked the papers with numbers from one to seventy-five participated in the study.

Data Collection Method

The cross-sectional survey was used as a method of data collection from the patients.

Data collection tool

Semi-structured questionnaires were formulated and used in the data collection process.

Data collection procedure

Before giving out the questionnaires, the researcher fully explained the questions to the respondents, ensured that all had consented, and after being answered, they were used to collect data. Each filled-in questionnaire was checked for accuracy. Data from fully filled questionnaires were prioritized during analysis.

Piloting the study

Prior to the study, the researcher visited the MRRH eye department to obtain permission from the relevant authorities to carry out the study and also to ascertain that the study was relevant and needed.

Inclusion Criteria

The study included only patients who attend eye care services at Eye Clinic in MRRH, have V/A less than 6/18, and consent to participate.

Criteria Exclusion

The study excluded patients who were not willing to participate, those who did not have a VI problem, and those who did not attend eye care services at Eye Clinic in MRRH.

Study variables

Dependent variable

Adult visual impairment, which was defined as visual acuity in the better eye worse than 6/18 in adults. Visual impairment was further graded as mild, moderate, severe, and blindness according to the extent of the visual acuity.

Independent Variable

These were age, level of education, sex, occupation, tribe, religion, address, and history of systemic and ocular illnesses.

Quality control

This was done through pre-visiting, training of research assistants, and pre-testing of data tools by the supervisor for approval. Field editing was done on the spot, and data was kept safely in a file.

Data analysis and presentation

After collecting the data, it was analysed using Microsoft Excel and presented using tables, figures, graphs, and narratives.

Descriptive statistics and manual analysis were employed as methods of data analysis.

Ethical considerations

Introductory letter

A permission letter and an introductory letter from the principal of OCO Training school were taken to the hospital director, who recommended me to the in-charge of the MRRH eye department, who then permitted me to carry out the research.

Informed consent

Verbal consent was sought from the patients after the explanation of the study topic. The patients were assured of their right to consent.

Confidentiality

Before data collection, the researcher and the research assistants assured the patients that the information collected would be kept confidential and would only be used for academic purposes and planning to promote better social life. To further ensure this, code numbers were used instead of the patients' names as an assurance that no one would know from whom the information was obtained.

Results

Socio-demographic data.

Table 1: Showing socio-demographic data

Variables	Categories	Frequency(n=50)	Percentage (%)
Sex	Male	21	41.67
	Female	29	58.33
Age	18-25	8	15.55
	26-40	9	18.33
	41-60	12	24.45
	Above 60	21	41.67
Education level	Preprimary/illiterate	17	33.33
	Primary	14	27.78
	Secondary	08	16.67
	Tertiary	07	13.89
	Others	04	8.33
Occupation	Civil servant	08	16.67
	Business personnel	10	19.44
	Housewife	09	18.06
	Peasants	12	23.61
	Others	11	22.22
Marital status	Single	09	18.06
	Married	17	34.72
	Divorced	13	25
	Widow/widower	11	22.22

N=50, Source: Primary Data, 2023.

From the results of the table above, the sample space included 29 (58.33%) females and 21(41.67%) males. Of the sample space, 8 were in the age range of 18 and 25years, 9 were in the age range of 26-40 years, 12 were in the age range of 41-50 years, and 21 were aged 60 years and above, representing 15.55%, 18.33%, 24.45%, 41.67% respectively of those participants diagnosed with visual impairment.

By educational level, 17(33.33%) of the participants with visual impairment were illiterate, 14 (27.78%) of the participants with visual impairment attained primary education, 08 (16.67%) of the participants with visual impairment attained secondary education, 07 (13.89%) of

the participants with visual impairment had reached tertiary level of education while 04 (8.33%) of the participants with visual impairment had achieved other higher levels of education.

Of those participants with visual impairment, 08 (16.67%) were civil servants, 10 (19.44%) were business personnel, 09 (18.06%) were housewives, another 12 (23.61%) were peasants, and 11 (22.22%) were affiliated to other professions.

Lastly, by marital status, 09 (18.06%) of the participants with visual impairment were single, 17 (34.72%) were married, 13 (25%) were divorced, while 11 (22.22%) were widows or widowers.

Prevalence of visual impairment among patients.

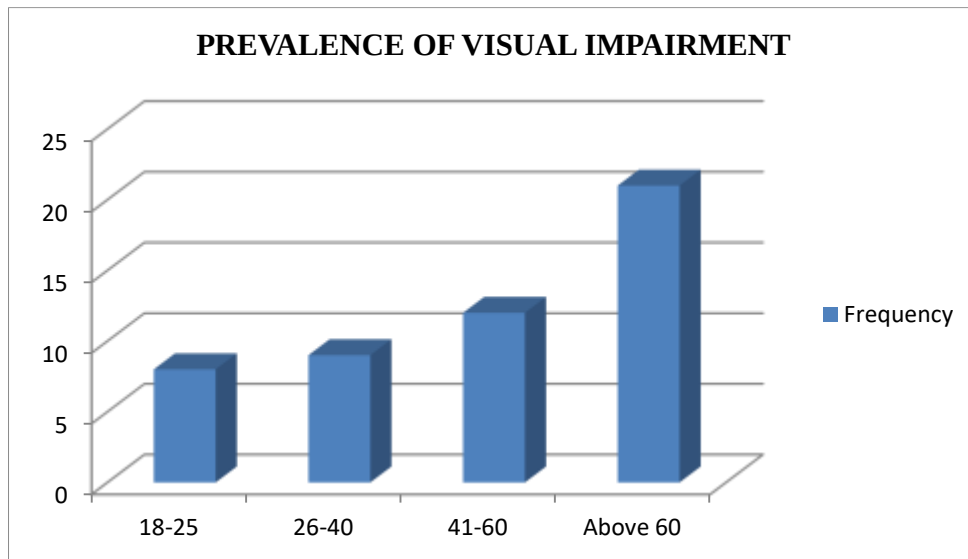


Figure 1: Graph showing Prevalence of Visual Impairment against Age among Patients.

From Figure 1, 8 patients in the age range of 18 and 25 years had visual impairment, 9 patients in the age range of 25 and 40 years had visual impairment, 12 adults in the age range of 41 and 60 years had visual impairment, while 21 patients above 60 years had visual impairment.

Risk factors associated with visual impairment

Table 2: Risk factors associated with visual impairment

Factors associated with visual impairment	Frequency(n=50)	Percentage (%)
Smoking and alcoholism	07	15.28
History of Eye Trauma	15	30.56
Family history of chronic eye diseases	13	26.38
Long-term use of medication	09	16.67
Chronic medical condition	06	11.11

N=50, Source: Primary Data, 2023.

From table 2, 07 patients with visual impairment were either smokers or alcoholics, 15 patients with visual impairment had a history of eye trauma, 13 patients with visual impairment had a family history of chronic eye diseases, whereas 06 patients had a chronic medical condition, and 09 patients had used medication for a long time.

Causes of visual impairment among patients.

Table 3: Causes of visual impairment among patients.

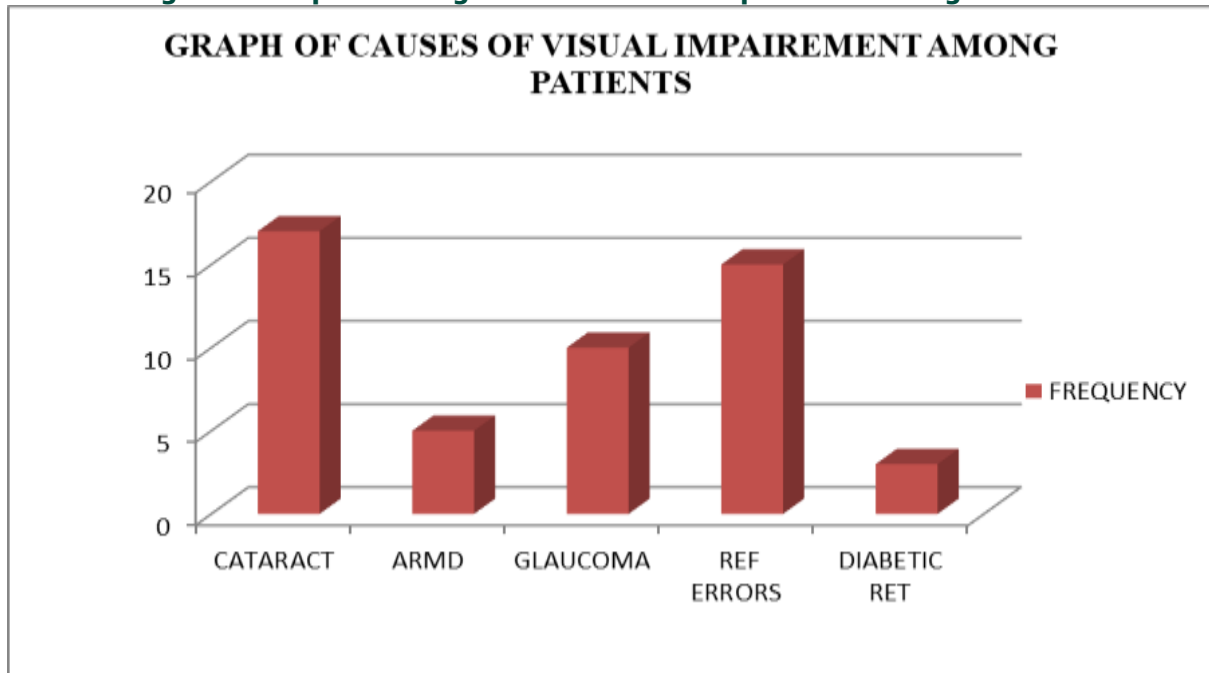
Causes	Frequency(n=50)	Percentage (%)
Cataract	17	33.33
Age-related macular degeneration	05	9.72
Glaucoma	10	20.83
Uncorrected refractive errors	15	29.17
Diabetic retinopathy	03	6.94

N=50, Source: Primary Data, 2023.

From table 3, among the 50 participants with visual impairment, 17 (33.33%) of the cases of visual impairment were caused by cataract, 15 (29.17%) of the visual impairment among the participants were caused by uncorrected refractive errors, 15 (20.83%) of the cases of

visual impairment were caused by glaucoma, 7 (9.72%) of the cases of visual impairment among the participants were caused by age related macular degeneration and 5 (6.94%) of the visual impairment in the participants were caused by diabetic retinopathy.

Figure 3: Graph Showing Causes of Visual Impairment among Patients



From the graph, visual impairment in 24 patients were caused by cataract, 7 cases of visual impairment among the patients were caused by age related macular degeneration, 15 of the cases of visual impairment in the patients were caused by glaucoma, refractive errors caused 21 of the cases of visual impairment among the patients while only 5 of the cases of visual impairment were caused by diabetic retinopathy.

Discussion

Prevalence of visual impairment among patients

It revealed that the prevalence of visual impairment increases with increasing age, with adults above 60 years worst affected, accounting for 41.67% of the cases. This is possibly due to the increased risk of blinding conditions with increased age, such as cataract, glaucoma, age-related macular degeneration, and diabetic retinopathy, among others. A study conducted at Mulago National Referral Hospital—a major eye care center in Uganda—found that the prevalence of visual impairment increases significantly with age, mirroring your findings in Mbale Regional Referral Hospital. Specifically, among patients aged 60 and above, 50.3% experienced visual impairment, with age being a statistically significant risk factor. (Mulinde et al., 2022).

It further revealed that the prevalence of visual impairment was highest among patients who were

illiterate (33.33%) and decreased with increased level of education. This is probably because of poor health-seeking behavior among illiterates due to a lack of awareness about eye care services, while the decreased prevalence of visual impairment among patients is probably due to good health-seeking behavior of educated people who are well informed about eye health and the fact that most educated adults can afford these services. Occupation and marital status were the other factors that had no significant effect on cases of visual impairment among patients.

These results agree with a study that was conducted about the Prevalence, causes, and factors associated with VI and blindness among registered pensioners in Ghana. Generally, there was an increasing prevalence of blindness and moderate and severe visual impairment with increasing age. The prevalence of blindness was lowest in the below 65-year-old age group, thus 2.1%, and highest in the above 80-year-old group, 12.2%. Similarly, the prevalence of moderate and severe visual impairment, 15.2%, was lowest in the below 65-year age group and highest in the 80 years and above group, 39.7%. The prevalence of pensioners in Ghana who were either blind or had moderately severe VI was 173 per 1000 in the below 65-year age group, and it increased with increasing age to as high as 519 per 1000 in the 80 years and above group. (Benjamin, D., Nuerty, et al., 2019). The slight disparities in results are due to the fact that populations of different

age groups were used, and different methods of collecting data were used.

Factors associated with visual impairment among patients

Data analysis and interpretation revealed that visual impairment increased with increasing age. This is possibly due to the increased risk of blinding conditions with increased age, such as cataract, glaucoma, age-related macular degeneration, and diabetic retinopathy, among others. Similarly, in adults aged 70 and above, visual impairment was highly prevalent, and the odds increased sharply with age. Cataracts and retinal diseases (e.g., AMD and diabetic retinopathy) were the leading causes. (Shen et al., 2021)

It also revealed that there was an increase in visual impairment in patients with a history of eye trauma (30.56%), possibly due to increased risk of developing eye conditions such as cataract, glaucoma, refractive errors, and corneal opacities, among others, which contribute highly to visual impairment.

It further revealed that visual impairment increased among patients with a family history of chronic eye diseases (26.38%), probably due to the increased risk of transmitting conditions such as glaucoma, cataract, refractive errors, and others genetically among the family members.

These findings agree with a community-based cross-sectional study done on the prevalence and associated factors of visual impairment among adults at Debre Berhan town, North Shewa, Ethiopia, which found that age, history of eye trauma, family history of eye problems, and educational status had statistically significant associations with visual impairment. Adults aged 40-60 years were 3 times more likely to present with visual impairment compared to those aged 18-39 years; adults aged >64 years were even 12 times more likely due to increased prevalence of age related to increased prevalence of age-related eye diseases and degenerations in the age groups. In the same study, illiterate adults were 3 times more likely to present with visual impairment than literate adults which was predicted to be due to poor health related behaviors in illiterates, those with history of eye trauma were 4 times more likely to present with visual impairment than those without which was explained due to deterioration of the eye structure, functional loss and exposure to ocular infections following trauma and adults with family history of eye problems were 7 times more likely to have visual impairment compared to those adults without family history which was attributed to inheritance of genetic factors (Assefa, N.L., et al, 2020).

Causes of visual impairment among adults

It revealed that cataract was the leading cause of visual impairment among the patients (33.33%), followed by uncorrected refractive error (29.17%), and the third leading cause of VI was glaucoma (20.83%), while diabetic retinopathy was the least common cause of VI in

the patients (6.94%). Cataract was the leading cause of VI, probably because of a shortage of skilled personnel and facilities to adequately handle cases of cataract that keep rising due to population growth in the study area. Diabetic retinopathy contributed least to the cause of VI among patients, probably due to the few cases of diabetes in adults, which is a risk factor for developing diabetic retinopathy, which in turn causes visual impairment.

These findings agree with a nationwide cross-sectional study on the prevalence, causes, and factors associated with visual impairment and blindness among registered pensioners in Ghana, which discovered that the leading cause of visual impairment and blindness put together was cataract, accounting for 52.3%. Refractive error (19.4%) and glaucoma (9.2%) also formed part of the top three causes of combined VI and blindness among the pensioners in Ghana. (Benjamin D. Nuerty et al., 2019)

Conclusion

This study specifically sought to determine the factors associated with VI among patients attending eye care services at the eye clinic in Masaka Regional Referral Hospital. The study established that the prevalence of visual impairment in patients increases with increasing age, with those above 60 years worst affected. The study also found that the prevalence of VI among patients was highest among illiterates and lowest in literates.

This study also found that a history of eye trauma and family history of chronic eye disease were the leading risk factors for VI, while smoking and alcoholism were the least significant risk factors for developing VI.

The study further found that Cataract was the leading Cause of visual impairment among patients, while diabetic retinopathy was the least common cause of VI.

Recommendation

There is a need for the government and policymakers to employ more eye care workers immediately at lower health centers to detect and manage irreversible blinding eye disorders, such as glaucoma, age-related macular degeneration, and reversible eye conditions, such as cataract and refractive errors, that cause visual impairment.

The government should embark on training and retraining more eye care workers, such as Ophthalmologists, Optometrists, ophthalmic clinical officers, Ophthalmic assistants, among others, to ensure adequate skilled manpower and keep updating their skills so that the prevalence of visual impairment can be reduced in the next 5 years.

Government, through district health teams and hospital administration, should carry out awareness programs in the community to improve health-seeking behavior, for example, through eye camps, so that the risk factors of visual impairment can be treated as early as possible among the population immediately.

More research is to be carried out immediately to understand the prevalence and factors associated with visual impairment in Uganda further and expand the

national database, which can be done by the government through research hospitals, NGOs, as well as postgraduate students of ophthalmology.

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List of Abbreviations

BLD	Blindness
DCO	Diploma in Clinical Ophthalmology
HMIS	Health Management Information System
LV	Low Vision
MOH	Ministry of Health
MRRH	Masaka Regional Referral Hospital
MSVI	Moderate- Severe Visual Impairment
OCO	Ophthalmic Clinical Officer
UAHEB	Uganda Allied Health Examinations Board
V/A	Visual Acuity
VI	Visual Impairment
NGOs	Non-Government Organizations

Source of funding

The study was not funded.

Conflict of interest

The author declares no conflict of interest.

Author contributions:

Salim Kazibwe Ssemuusi was the principal investigator and analyzed the data.

Violet Alimwendwa supervised the research project.

Data availability

Data is available upon request.

Informed consent

All the participants consented to this study.

Author Biography

Salim Kazibwe Ssemuusi holds a Diploma in Clinical Ophthalmology from the Ophthalmic Clinical Officers' Training School.

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