

MEDICAL-RELATED RISK FACTORS FOR AGE-RELATED MACULAR DEGENERATION AMONG PATIENTS ATTENDING EYE CARE CLINIC AT JINJA REGIONAL REFERRAL HOSPITAL. A CROSS-SECTIONAL STUDY.

Joshua Tumwebaze*, Taddeo Mulumba
Ophthalmic Clinical Officers' Training School

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ABSTRACT.

Background:

Patients with AIDS have an increased age-adjusted prevalence of intermediate-stage AMD compared with that found in a non-HIV-infected cohort evaluated with similar methods suggesting a potential risk that AIDs and other medical conditions could have towards Age-Related Macular Degeneration. The study aims to assess the medical-related risk factors for Age-Related Macular Degeneration.

Methodology:

A Cross-sectional descriptive study utilizing quantitative data collection methods. The study population comprised all patients receiving eye care services for Age-related Macular Degeneration conditions at the eye unit of Jinja Regional Referral Hospital for a period of 6 months from October 2022 to March 2023. Non-probability sampling was used to select 50 participants.

Results:

Half 25/50(50%) of the total number of respondents were between 61-70 years and the minority 02/50 (04 %) were 31-40 years. Most respondents 21/50 (42%) were peasants while 10/50 (20%) were Business personnel. The majority 18/50(36%) Strongly agreed that cataracts are a risk factor for Age-related Macular degeneration, followed by 17/50(34%) respondents who agreed. More respondents 39/50 (78%) indicated they had an intra-ocular surgery than 11/50(22%) respondents had not had an intra-ocular surgery. Most respondents 28/50 (56%) indicated they had a chronic disease while 22/50 (44%) respondents did not. A higher number of respondents 31/50(62%) were HIV Positive than 19/50(38%) who were found to be HIV negative.

Conclusion:

The medical-related risk factors for Age-related Macular Degeneration were having HIV/AIDs, chronic systemic diseases, Cataracts, and intra-ocular surgeries.

Recommendations:

Similarly, Health workers especially ophthalmologists and ophthalmic clinical officers should provide health education to the patients and the public and carry out regular outreach for eye vision screening.

Keywords: *Medical-related risk factors, Ophthalmologists, Chronic disease, Macular Degeneration*

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Corresponding author: *Joshua Tumwebaze**

Email: tumwebazejoshua77@gmail.com

Ophthalmic Clinical Officers' Training School

BACKGROUND

Patients with AIDS have an increased age-adjusted prevalence of intermediate-stage AMD compared with that found in a non-HIV-infected cohort with this increased prevalence being consistent with the increased prevalence of other age-related diseases in antiretroviral-treated, immune-restored, HIV-infected persons when compared to non-HIV-infected persons (Jabs, 2015). The proven risk factors

include Demographic and environmental risk factors for example age, sex, body composition, diet, sunlight exposure, ethnicity, comorbidities like cataracts, hypertension, hyperthyroidism, chronic kidney disease, Parkinson's disease, Alzheimer's disease, and Genetic risk factors.

In Sub-Saharan Africa in Ibadan, 101 out of 768 retinal patients 14% were diagnosed with AMD for ages 60 to 79 between October 2007 and September 2010 (Oluleye and

Tunji, 2012). In Europe, it was found that Pseudophakic patients were generally older and had more often myocardial infarction as compared to phakic patients. They showed that higher BMI, history of arterial hypertension, hypercholesterolemia, and atherosclerosis tend to occur together as risk factors for AMD (Bucan, 2021). In the Nakuru District of Kenya, macular degeneration was among the six most common causes of visual loss among patients 50 years old. In Uganda, it is estimated that 30 out of 348 people would develop bilateral blindness or bilateral visual impairment, per year (Mbulaiteye et al., 2003). In Uganda, 30 out of 348 people would develop bilateral blindness or bilateral visual impairment, per year due to age-related macular degeneration (Mbulaiteye et al., 2003). Diabetic retinopathy (DR), a common complication of diabetes, is also a major cause of visual impairment and the leading cause of blindness among working-age adults where Both AMD and DR impact patients' visual acuity and their quality of life enormously (Ming-Shan et al., 2018). Intracellular zinc depletion may also impair cellular metal homeostasis, induce apoptosis of RPE and retinal cells, and enhance oxidative stress and cell damage, causing the development of AMD (Ugarte and Osborne, 2014). Thyroid disease-causing hyperthyroidism has been implicated as a risk factor for developing late AMD (Gopinath et al., 2016). Serum-free thyroxine (FT4) levels are associated with an increased risk of developing AMD (FT4 increase per pmol L⁻¹, HR 1.04), while serum thyroid-stimulating hormone (TSH) is not (Chaker et al., 2015). The study aims to assess the medical-related risk factors for Age-Related Macular Degeneration.

METHODOLOGY

Study design

A Cross-sectional descriptive study design involving quantitative methods of data collection.

Study Area

The study area was the eye clinic of Jinja Regional Referral Hospital. The hospital is located in the South Eastern region of the country in the central division of Jinja city near the source of the Nile which is located 80km east of Kampala the capital city of Uganda. The hospital was founded in 1962 and has a bed capacity of 600. Jinja Hospital is a regional referral hospital serving several clients/ patients across the Busoga region and other neighboring districts of Buikwe, Kayunga, and others. Some clients are referred from different hospitals and health centers IV while others are self-referred. The services provided include medical, surgical, orthopedic, eye care, private, gynecology, pediatrics dental, ENT, Lab, X-ray/Scan, Immunization,

HIV testing and counseling, Reproductive health services, and Safe Male Circumcision among others.

The hospital has 15 wards which include surgical female/male, medical female/male, TB, Eye, Urology, Grade A, Annex, TB, Psychiatric and Children's wards, Intensive Care Unit, postnatal, Gynecological, and Maternity wards.

Study Population

The study population comprised of all patients receiving eye care services for Age-related Macular Degeneration conditions at the eye unit of Jinja Regional Referral Hospital.

The study was carried out for a period of 6 months, that is October 2022 to March 2023

Sample size determination

The sample size was calculated using the method below according to Mbuto Samuel (2004)

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Sample size = $\frac{D \times H}{T}$ Where:

Where:

D -number of days that were available for data collection

H -number of hours taken per day

T -total time that was spent on each event.

D =30days

H =5hours

T =3minutes

N =50participants

Sampling technique

The study was a non-probability sampling process specifically a purposive sampling technique, where only patients with Age-related Macular Degeneration participated in the study.

Sampling procedure

Patients registered at the reception, their age and sex documented regardless of presenting ocular complaints. Whenever any ophthalmic clinical officer or ophthalmologist identified a case of Age-related Macular Degeneration during history taking, examination, or treatment of a patient, he/she directed the patient to the principal investigator or any of the research assistants for inclusion into the study.

Data collection method

The principal investigator used interviews as the method of data collection using an interview guide with well-structured questions.

All clinicians at the JRRH eye clinic were sensitized and requested to identify the participants with Age-related Macular Degeneration of eye conditions.

clinic. He then introduced himself and the objectives to the respondents. The principle of confidentiality and anonymity was observed throughout the study.

Data collection tool

A questionnaire filled in by the researcher or researcher assistant was used to collect data from the respondents.

Data Collection Procedure

The principal investigator started by creating rapport explained the objectives of the study to the respondents and reassured them about confidentiality. The questions were read and interpreted for the respondents to understand. Responses were given in the local language and written in English by the principal investigator and his assistants for those who did not understand the English language. Data was collected for a period of 30 days as at least 2 respondents each taking 20-30 minutes were interviewed daily until the required sample size was obtained. At the end, the respondents were thanked for their co-operation.

Pre-testing

The study tool was pre-tested on a few patients attending the eye clinic and necessary adjustments are to be made to ensure validity and reliability. Patients who were included in the study were asked to consent. Those in exclusion were below the age range and those who did not consent to participate in the study.

Data Analysis and presentation

The data collected was manually analyzed through tallying and the use of scientific calculators. The results were presented in the form of tables, Figures, and statements. A computer was used to type the report. Microsoft Excel was used in drawing charts and graphs for a clear presentation of the findings.

Ethical Consideration

Upon approval of the research proposal by the school, a letter of introduction was provided by the Principal of the Ophthalmic Clinical Officers Training School, and then it was delivered to the hospital director JRRH to grant permission to undertake the study in the hospital. The researcher introduced himself to the in-charges of the eye

RESULTS

Social Demographic Data of the Respondents

Table 1 Shows Social Demographic Characteristics (n=50 Respondents)

Category	Frequency(n=50)	Percentage (%)
Age		
35-40	02	04
41-50	09	18
51-60	14	28
61-70	25	50
Sex		
Female	29	58
Male	21	42
Tribe		
Musoga	27	54
Muganda	13	26
Munyankole	08	16
Others	02	04
Religion		
Anglican	19	38
Muslim	09	18
Catholic	22	44
Level of Education		
Primary	32	64
Secondary	16	32
Tertiary	02	04
Occupation		
Business personnel	10	20
Housewife	19	38
Peasant	21	42
Home Area		
Rural	39	78
Urban	11	22

Table 1, About the age of respondents, 25/50(50%) which is half of the total number of respondents were between 61-70 years, and the minority 02/50 (04 %) were 31-40 years. On sex, more respondents 29/50 (58%) were females than 21/50 (42%) males. On tribe, the majority 27/50 (54%) of the respondents were Basoga, while the minority 02/50 (04%) were among others. On religion, most of the respondents 22/50 (44%) were Catholics and a minority 09/50 (18%) were Muslims.

The Level of Education established that the majority 32/50 (64%) of the respondents were primary dropouts while the

least 02/50 (04%) had attained a tertiary school level of education.

On occupation, most respondents 21/50 (42%) were peasants while 10/50 (20%) were Business personnel.

Concerning home area, the higher number 39/50 (78%) respondents lived in Rural areas while the lower number 11/50 (22%) lived in Urban areas.

Medical-related risk factors of Age-Related Macular Degeneration

Figure 1 Shows cataracts as Medical risk factors for Age-related Macular Degeneration.

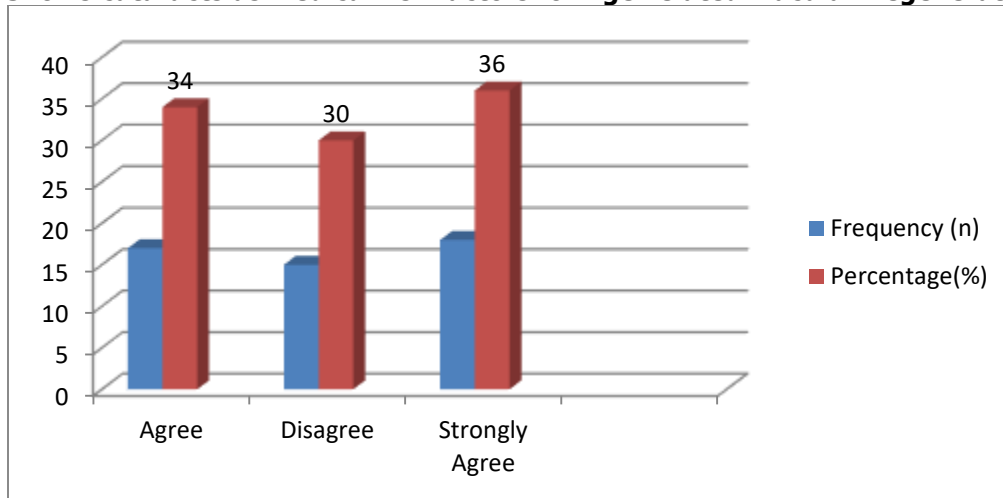


Figure 1, the majority of the respondents 18/50(36%) Strongly agreed that cataracts are a risk factor for Age-related Macular Degeneration, followed by 17/50(34%) respondents that agreed while the least number of respondents 15/50(30%) Disagreed.

Figure 2. Showing Intra-ocular Surgery as a medical Risk factor for Age-related Macular Degeneration.

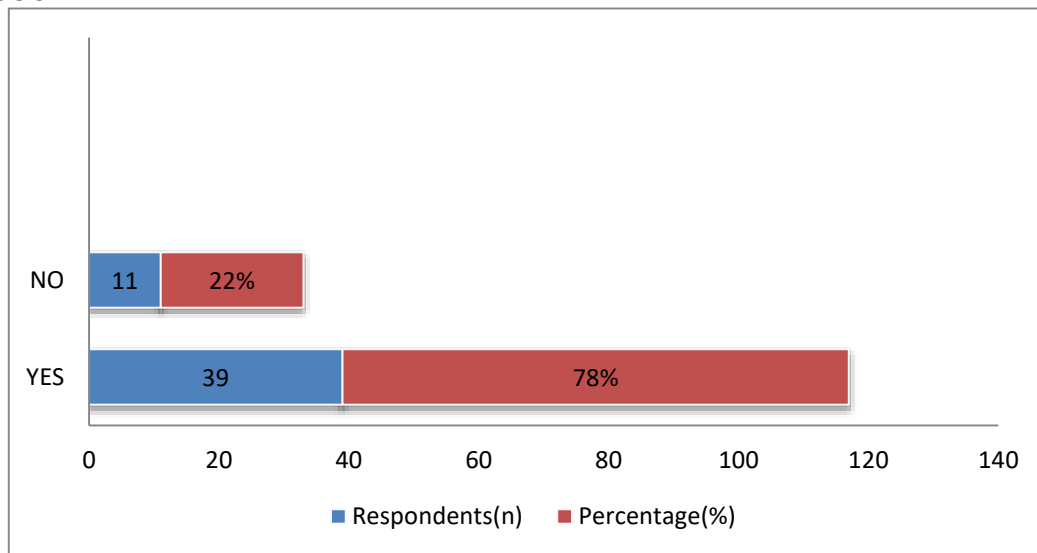


Figure 2, There were more respondents 39/50 (78%) who said YES indicating that they had had an intra-ocular surgery than 11/50(22%) respondents who said NO indicating that they had not had an intra-ocular surgery.

Figure 3 Showing Chronic Diseases as a Medical Risk Factor for Age-related Macular Degeneration.

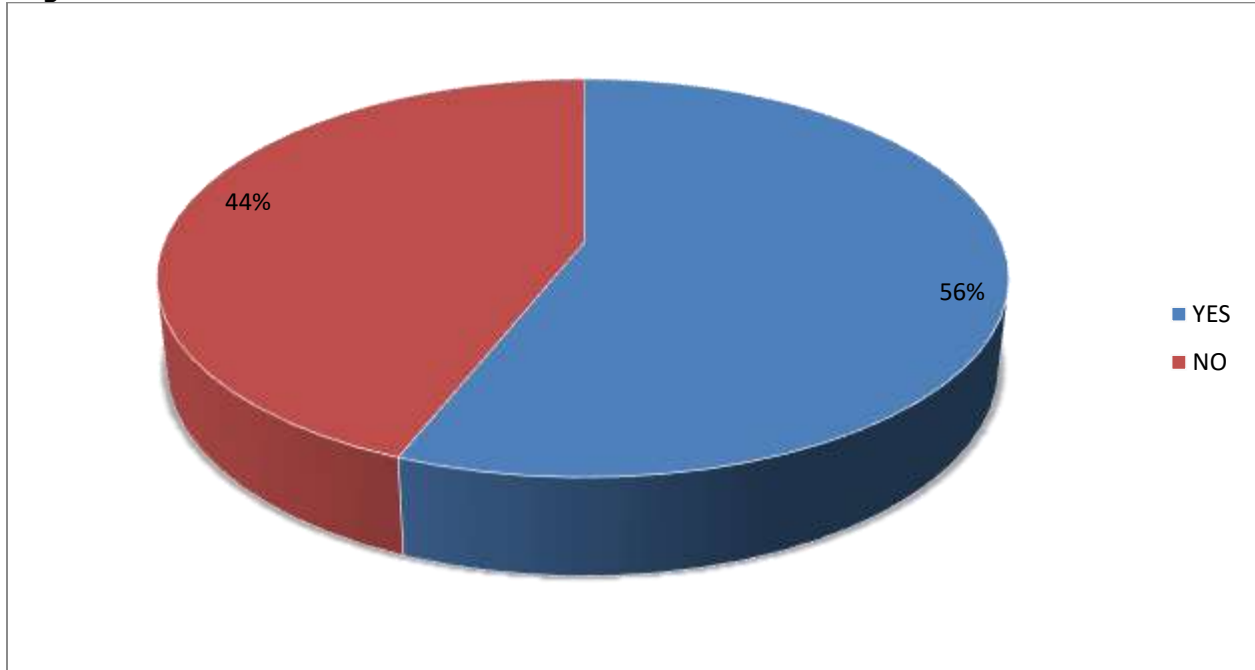


Figure 3, More respondents 28/50 (56%) said YES indicating that they had a chronic disease while 22/50 (44%) respondents said NO indicating that they did not have any chronic disease in their body system.

Table 2 Shows HIV/AIDS as a Medical risk factor for Age-related Macular Degeneration.

HIV STATUS	FREQUENCY (n=50)	PERCENTAGE (%)
Positive	31	62
Negative	19	38

Table 2, The higher number of respondents 31/50(62%) were HIV Positive than 19/50(38%) who were found to be HIV negative.

DISCUSSION

Medical-related risk factors for Age-related Macular Degeneration

Under the medical-related risk factors, it was found that more respondents 62% were HIV positive indicating that HIV/AIDS patients are at a higher risk for AMD. This is in agreement with the cross-sectional study, patients with AIDS enrolled in the longitudinal study of the ocular complications of AIDS. It was concluded that patients with AIDS had an increased age-adjusted prevalence of intermediate-stage AMD (Jabs, 2015)

More research findings showed a higher number of respondents 56% with chronic systemic diseases as compared to 44% who did not have any. Also, 78% of

respondents had had intra-ocular surgeries for example Cataract surgeries as compared to 22% who never had surgeries. This was in agreement with the cross-sectional study in eight ophthalmology centers in Europe that found that AMD was more common in Pseudophakic patients than aphakic, patients with arterial hypertension, hypercholesterolemia, atherosclerosis, diabetes mellitus than normal patients.

CONCLUSION

The medical-related risk factors for Age-related Macular Degeneration were having HIV/AIDS, chronic systemic diseases, Cataracts, and intra-ocular surgeries.

RECOMMENDATIONS

Similarly, Health workers especially ophthalmologists and ophthalmic clinical officers should provide health education

to the patients and the public and carry out regular outreach for eye vision screening.

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LIST OF ABBREVIATIONS

AMD	Age-related macular degeneration
DR	Diabetic Retinopathy
HIV	Human Immunodeficiency Virus
JRRH	Jinja Regional Referral Hospital

SOURCE OF FUNDING

The study was not funded.

CONFLICT OF INTEREST

The author did not declare any conflict of interest.

AUTHOR BIOGRAPHY

Joshua Tumwebaze is a student with a diploma in Clinical Ophthalmology at Ophthalmic Clinical Officers' Training School Jinja.

Taddeo Mulumba is a tutor at the Ophthalmic Clinical Officers' Training School in Jinja.

REFERENCES

1. Bucan K, Lukic M, Bosnar D, et al. (2021). Analysis of association of risk factors for age-

- related macular degeneration. *European Journal of Ophthalmology*. doi:10.1177/1120672121998900
2. Chaker L, Buitendijk GH, Dehghan A, et al. (2015). Thyroid function and age-related macular degeneration: a prospective population-based cohort study The Rotterdam Study. *BMC Med* 2015; 13: 94. [PMC free article] [PubMed] [Google Scholar]
3. Gopinath B, Liew G, Kifley A & Mitchell P. (2016). Thyroid dysfunction and ten-year incidence of age-related macular degeneration. *Invest Ophthalmol Vis Sci* 2016; 57: 5273–5277. [PubMed] [Google Scholar]
4. Jabs, D. A., Van Natta, M. L., Sezgin, E., Pak, J. W., Danis, R., & Studies of the Ocular Complications of AIDS Research Group. (2015). Prevalence of intermediate-stage age-related macular degeneration in patients with acquired immunodeficiency syndrome. *American journal of ophthalmology*, 159(6), 1115–1122.e1. <https://doi.org/10.1016/j.ajo.2015.01.037>
5. Mbulaiteye SM, Reeves BC, Mulwanyi F, Whitworth JA, Johnson G. (2003). Br J Ophthalmol. Incidence of visual loss in rural Southwest Uganda. Jul;87(7):829-33. <https://doi.org/10.1136/bjo.87.7.829>. PMID:128128776; PMCID: PMC1771764. Incidence of visual loss in rural loss in rural southwest Uganda.
6. Ming-Shan He, Fang-Ling Chang, Hong-Zin Lin, Jung-Lun Wu, Tsung-Cheng Hsieh, Yuan-Chieh Lee. (2018). The Association between Diabetes and Age-related Macular Degeneration Among the Elderly in Taiwan *Diabetes Care* 1 October 2018;41(10): 2202-2211. <https://doi.org/10.2337/dc18-0707>
7. Oluleye and Tunji Sunday. (2012). Is age-related macular degeneration a problem in Ibadan, Sub-Saharan Africa? *Clinical ophthalmology*, vol.6, pp 561. Gale Academic OneFile. link.gale.com/app/doc/A344827539/AONE?u=anon263bfbda&sid=googlescholar&xid=b47aade
8. Ugarte M & Osborne NN. (2014). Recent advances in the understanding of the role of zinc in ocular tissues. *Metallomics* 2014; 6: 189–200. [PubMed] [Google Scholar]

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