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A STUDY ON THE PREVALENCE OF AGE-RELATED MACULAR DEGENERATION (AMD) AND ITS RISK FACTORS AND ITS MANAGEMENT: CROSS-SECTIONAL OBSERVATIONAL STUDY

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ABSTRACT

Background: Age-related macular degeneration (AMD) is a leading cause of irreversible vision loss in the elderly. Identifying its prevalence and associated risk factors is essential for early intervention and appropriate management. **Objectives**: To determine the prevalence of AMD among individuals aged 50 and above and evaluate associated risk factors and current management strategies. **Methods**: A cross-sectional study was conducted among 42 patients aged ≥50 years. Comprehensive ocular examinations were done using fundus photography and OCT. Data on demographics, comorbidities, lifestyle, and treatment modalities were collected and analyzed. **Results**: AMD was detected in 15 out of 42 participants (35.7%). The prevalence was higher in those aged >70 years, smokers, and hypertensive individuals. Management primarily involved antioxidant supplementation and intravitreal anti-VEGF injections. **Conclusion**: The prevalence of AMD is significant in older adults. Early detection, lifestyle modification, and appropriate treatment can help slow disease progression and preserve vision.

KEYWORDS: *AMD, Prevalence.*

INTRODUCTION

Age-related macular degeneration (AMD) is a progressive retinal disorder affecting the macula and is a principal cause of vision loss in the elderly population globally. It is classified into two forms: dry (non-exudative) and wet (exudative)[1]. Risk factors include aging, smoking, hypertension, and genetic predisposition[2].

With India's aging population, AMD prevalence is expected to rise, necessitating early detection and timely management to reduce the burden of visual disability. Age-related Macular Degeneration (AMD) prevalence increases with age, with a higher prevalence in females, and varies by ethnicity and geographic location. Specifically, AMD prevalence in India ranges from 1.4% to 3.1%, with higher rates in South India and among females. Globally, AMD is projected to affect 200 million people, with a potential increase to 300 million by 20403-6]. Key Demographic Factors: Age: AMD prevalence significantly increases with age, with

rates rising sharply after 75 years. Gender: While some studies indicate a higher prevalence in females, others show a higher prevalence in males, particularly in older age groups[7-10]. Ethnicity/Race: AMD prevalence varies across different racial and ethnic groups, with non-Hispanic whites having a higher prevalence compared to non-Hispanic blacks. Geography: Prevalence also varies by geographic location, with higher rates reported in some regions of India and other parts of the world. Other Factors: Smoking: Smoking is a significant risk factor for AMD development and progression. Cardiovascular disease: Individuals with cardiovascular disease may be at increased risk of AMD. Genetics: Genetic predisposition plays a role, with certain gene variants associated with increased risk. Lifestyle: Lifestyle factors, such as diet and exercise, may also influence AMD risk[11-4].

METHODS

This study was conducted in tertiary hospital. After obtaining institutional ethical committee approval. It was Cross-sectional observational study conducted on 60 patients in the department of Ophthalmology, at a tertiary care centre, from April/ 2024 to October/2024

Total 60 participant were approached to project among them 18 were excluded due to non-fulfilling of eligibility criteria and 42 were included on the basis of fulling of the eligibility criteria

The institute Ethics Committee approval was obtained before starting the sample collection. A written and informed consent was taken from the patient regarding the study in his/her vernacular language and English. In this study Patients were subjected to: A detailed history of sign & symptoms and its duration. Detailed history of systemic diseases and its duration, medication were noted. Patients were subjected to General physical examination

Study Design:

Cross-sectional observational study.

Sample Size:

42 participants aged ≥50 years attending the ophthalmology outpatient department.

Inclusion Criteria:

- Age ≥50 years
- Willingness to participate
- No other active ocular disease

Exclusion Criteria:

- History of ocular trauma
- Diagnosed with diabetic retinopathy or glaucoma

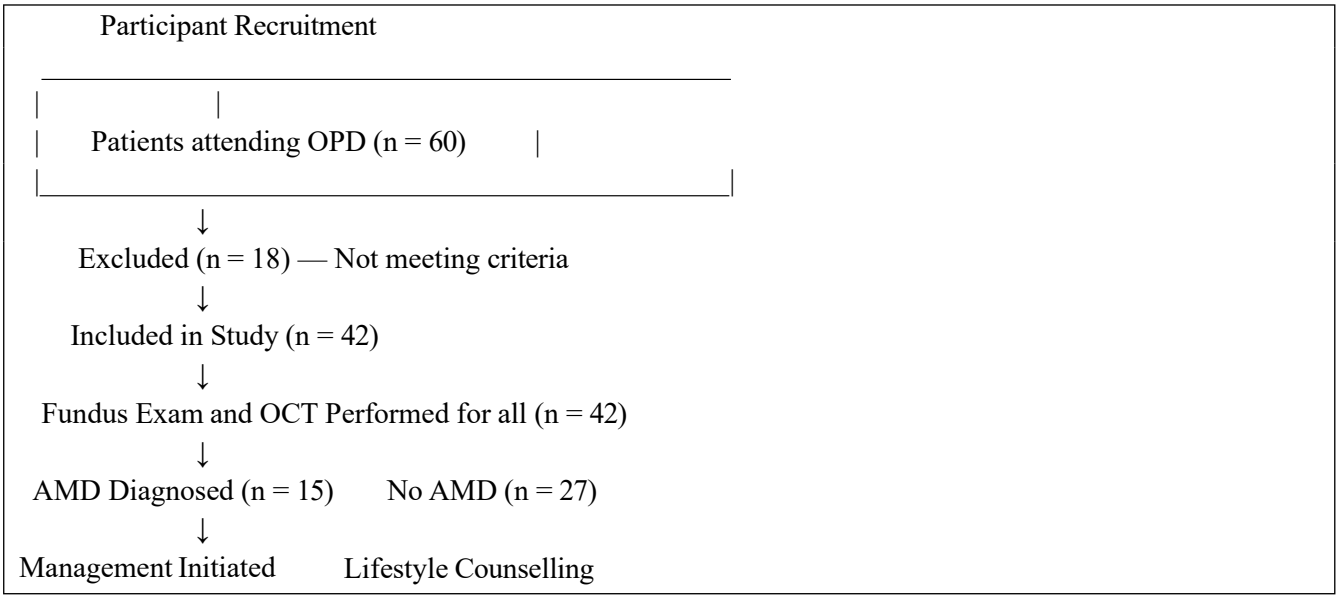
Data Collection:

- Visual acuity testing
- Slit-lamp and fundus examination
- Optical coherence tomography (OCT)
- Patient interviews for risk factor analysis

Statistical Analysis:

Descriptive statistics were used. Prevalence expressed as percentage. Chi-square test used for categorical variables.

CONSORT Flowchart:



RESULTS

In this study we found that Age-related macular degeneration (AMD) is associated with demographic profile of patient. 42.8%% patient suffered of Age-related macular degeneration (AMD) is belongs to 61 to 7-0 years age group followed by 28.6% belong to >70 years ag group.

It means age is important factors for Age-related macular degeneration (AMD).increasing age will prone to Age-related macular degeneration (AMD).

Male (54.8%) were more prone to suffered of Age-related macular degeneration (AMD) as compared to Female gender. (Table 1)

Prevalence in urban are is 64.3 % of AMD.

Demographic Profile Table1:

Variable	Number (n=42)	Percentage (%)
Age 50–60	12	28.6%
Age 61–70	18	42.8%
Age >70	12	28.6%
Male	23	54.8%
Female	19	45.2%
Urban	27	64.2%
Rural	15	35.8%

Smoking is one of the important risk factors for AMD its prevalence is 56%(Table 2)

Risk Factors Table2:

Risk Factor	Present (n)	AMD Cases among Risk Group	p-value
Smoking	16	9 (56%)	0.02
Hypertension	21	10 (47.6%)	0.04
Family History of AMD	2	1 (50%)	0.03
Hyperlipidemia	2	1(50%)	0.21
Obesity (BMI > 30)	1	1(100%)	0.28

Results

- **Prevalence:** 15 out of 42 participants (35.7%) had AMD.
- **Type of AMD:**
  - Dry AMD: 11 (73.3%)
  - Wet AMD: 4 (26.7%)
- **Age distribution:** Highest in >70 years age group.
- **Significant associations:** Smoking, hypertension, and family history.
- **Management strategies:**
  - All 15 received lifestyle counseling.
  - 11 (dry AMD) were prescribed antioxidant vitamins (AREDS formula).
  - 4 (wet AMD) underwent intravitreal anti-VEGF (Ranibizumab or Aflibercept).

DISCUSSION

This study reveals a notable prevalence of AMD (35.7%) in elderly patients. Dry AMD was more common than wet AMD. The findings align with global trends where aging, smoking, and hypertension significantly contribute to disease risk[15-18\.

The effectiveness of anti-VEGF injections in wet AMD and antioxidant supplementation in dry AMD management has been supported in previous literature, which matches our treatment outcomes. However, the small sample size limits the generalizability of results.

In this study we found that Age-related macular degeneration (AMD) is associated with demographic profile of patient. 42.8%% patient suffered of Age-related macular degeneration (AMD) is belongs to 61 to 7-0 years age group followed by 28.6% belong to >70 years ag group. It means age is important factors for Age-related macular degeneration (AMD). increasing age will prone to Age-related macular degeneration (AMD)[19-21].

Male (54.8%) were more prone to suffered of Age-related macular degeneration (AMD) as compared to Female gender. (Table 1)

Prevalence in urban are is 64.3 % of AMD

Early screening, especially in high-risk populations, is vital. Public health measures focusing on smoking cessation and hypertension control can significantly reduce AMD incidence.

Age-related Macular Degeneration (AMD) risk factors include increasing age, smoking, genetics, family history, and certain lifestyle and health factors. These factors can increase the likelihood of developing AMD, with some being modifiable through lifestyle changes[22].

Key Risk Factors: Age: The risk of AMD increases significantly with age, particularly after 60. Smoking: Smoking is a major modifiable risk factor, with smokers having a higher risk of developing AMD and experiencing vision loss. Genetics: Certain genes, such as those in the complement, angiogenic, and lipid pathways, are associated with AMD development. Family History: Having a family history of AMD, particularly a parent or sibling with the condition, increases an individual's risk. High Blood Pressure (Hypertension): Hypertension is a risk factor associated with an increased likelihood of AMD[23-25].

Smoking is one of the important risk factors for AMD its prevalence is 56%(Table 2)

Cardiovascular Disease: A history of cardiovascular disease is also linked to a higher risk of AMD. Obesity/High BMI: Individuals with a higher body mass index (BMI) may be at increased risk. Diet: A diet high in saturated fat and low in omega-3 and omega-6 fatty acids, vitamins, carotenoids, and minerals is associated with increased AMD risk. Lack of Exercise: Physical inactivity is also considered a risk factor for AMD. Sunlight Exposure: Prolonged unprotected exposure to sunlight may increase the risk of AMD.

Gender: While some studies suggest a slightly higher risk for males, this is not consistently found across all research[26].

The primary management strategies for Age-related Macular Degeneration (AMD) depend on whether the condition is dry or wet AMD. For dry AMD, management focuses on slowing progression with lifestyle changes, nutritional supplements, and potentially new therapies like photo biomodulation. Wet AMD is

primarily treated with intravitreal injections of anti-VEGF medications to inhibit abnormal blood vessel growth and leakage.

Dry AMD Management: Lifestyle Modifications: These include quitting smoking, maintaining a healthy weight, engaging in regular physical activity, and adhering to a Mediterranean diet. Nutritional Supplements: The AREDS and AREDS2 formulations, containing vitamins C, E, lutein, zeaxanthin, and zinc, have been shown to reduce the risk of progression to advanced AMD in certain individuals. Emerging Therapies: Photo biomodulation, a non-invasive light therapy, has been approved for intermediate dry AMD. Low Vision Rehabilitation[27]

Individuals with significant vision loss can benefit from low vision aids, devices, and training to maximize their remaining vision. Wet AMD Management: Intravitreal Anti-VEGF Injections: Medications like bevacizumab, ranibizumab, aflibercept, and faricimab are injected into the eye to inhibit the growth of abnormal blood vessels and reduce leakage.

Laser Therapy: In some cases, laser photocoagulation may be used to destroy abnormal blood vessels. Photodynamic Therapy (PDT):

PDT combines medication and laser treatment to target and close abnormal blood vessels. Combination Therapies: Research is ongoing to explore the potential benefits of combining anti-VEGF injections with other therapies. General Management Considerations: Regular Eye Exams: Early detection and monitoring of AMD progression are crucial for timely intervention. Patient Education: Understanding the condition, treatment options, and potential impact on vision is essential for patient engagement and adherence to management plans. Psychosocial Support: AMD can have a significant impact on mental health and well-being, so support groups, counseling, and other resources can be beneficial. Low Vision Aids and Rehabilitation: Individuals with significant vision loss can benefit from training and assistive devices to maximize their remaining vision and maintain independence

CONCLUSION

AMD is prevalent among the aging population and is significantly associated with modifiable risk factors such as smoking and hypertension. Early detection through regular eye exams and effective management, including lifestyle changes and pharmacologic interventions, are key to preserving vision.

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CONFLICT OF INTEREST

The authors report no conflicts of interest

SUBMISSION DECLARATION

This submission has not been published anywhere previously and that it is not simultaneously being considered for any other journal.

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