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ASSESSMENT OF FALL RISK IN OPHTHALMIC PATIENTS: A RETROSPECTIVE STUDY USING THE MORSE FALL SCALE

Ophthalomology

Dr Pidugu.Venkat Ramanaiah MBBS, Junior Resident, Department Of Ophthalmology, Narayana Medical College, , Nellore, AP, India

Dr V Vijaya Lakshmi MBBS, MS Ophthalmology, Professor & HOD, Department Of Ophthalmology, Narayana Medical College, Nellore, AP, India

Dr Regalla Sudha MBBS, MS Ophthalmology, Professor, Department Of Ophthalmology, Narayana Medical College, Nellore, AP, India

Dr Thummathati Sivapriya* MBBS, MS Ophthalmology, Senior Resident, Department Of Ophthalmology, Narayana Medical College, Nellore, AP, India *Corresponding Author

KEYWORDS

INTRODUCTION

Falls in hospital are a significant cause of preventable morbidity, prolonged hospital stay, and increased healthcare costs among hospitalized patients. Visual impairment is an established independent risk factor for falls, as vision is essential for balance, spatial orientation, and safe mobility.

Ophthalmic patients are particularly vulnerable due to reduced visual acuity, impaired contrast sensitivity, visual field defects, altered depth perception, and temporary postoperative visual limitations such as eye patching. Elderly ophthalmic patients often have associated systemic comorbidities that further increase fall risk.

The Morse Fall Scale (MFS) is a validated and widely implemented tool for fall risk assessment in hospital settings. It evaluates six parameters: history of falling, secondary diagnosis, ambulatory aid, intravenous therapy, gait, and mental status. Despite its routine use, limited data exist regarding its effectiveness specifically in ophthalmic inpatient populations.

This study aims to retrospectively assess fall risk among ophthalmic inpatients using the Morse Fall Scale and to evaluate its utility in identifying patients at high risk of falls in an ophthalmology ward.

MATERIALS AND METHODS

Study Design and Setting

This was a **retrospective observational study** conducted in the Department of Ophthalmology of a tertiary care teaching hospital.

Study Period

Medical records of ophthalmic inpatients admitted between **January 2025 and December 2025** were retrospectively reviewed.

Study Population

All eligible ophthalmic inpatients admitted during the study period were included.

Inclusion Criteria

- Patients aged ≥18 years
- Admission to the ophthalmology inpatient ward
- Documented Morse Fall Scale score at admission

Exclusion Criteria

- Incomplete or missing medical records
- Day-care admissions
- Patients with neurological or musculoskeletal disorders independently affecting gait or balance

Data Collection

The following information was extracted from hospital records:

- Age and sex
- Ophthalmic diagnosis
- Best-corrected visual acuity at admission
- Laterality of ocular disease
- Postoperative status
- Presence of systemic comorbidities
- Morse Fall Scale score at admission
- Occurrence of in-hospital falls

Fall risk was assessed using the Modified Morse Fall Scale (MFS), a validated screening tool for predicting inpatient fall risk. The scale consists of eight parameters: history of falls, presence of secondary diagnoses, use of ambulatory aids, presence of intravenous/heparin lock, gait pattern, mental status, medication use associated with fall risk, and alcohol intake. Each parameter was scored according to the standardized MFS scoring system, and the total score was calculated for each patient.

Morse Fall Scale Classification

- Low risk: 0–24
- Moderate risk: 25–44
- High risk: ≥45

Statistical Analysis

Data were analyzed using SPSS software. Continuous variables were expressed as mean ± standard deviation, and categorical variables as frequencies and percentages. Associations between fall risk categories and clinical variables were assessed using the chi-square test. A p-value <0.05 was considered statistically significant.

Results

A total of 312 ophthalmic inpatients were included. The mean age was 58.6 ± 14.9 years. There were 178 males (57.1%) and 134 females (42.9%).

Distribution of Fall Risk

- Low risk: 94 patients (30.1%)
- Moderate risk: 126 patients (40.4%)
- High risk: 92 patients (29.5%)

Association with Clinical Variables

High fall risk was significantly associated with:

- Age >60 years ($p < 0.001$)
- Best-corrected visual acuity worse than 6/60 ($p < 0.001$)
- Bilateral ocular disease ($p = 0.01$)
- Postoperative status ($p = 0.003$)

In-Hospital Falls

During hospitalization, 17 patients (5.4%) sustained documented falls:

- 14 patients (82.4%) belonged to the high-risk group
- 3 patients (17.6%) belonged to the moderate-risk group
- No falls occurred in the low-risk group

DISCUSSION

Falls among hospitalized patients remain a major patient safety concern, particularly in populations with sensory impairment. The present retrospective study highlights that a substantial proportion of ophthalmic inpatients admitted between January and December 2025 were at moderate to high risk of falls based on the Morse Fall Scale

(MFS). Nearly one-third of patients were classified as high risk, and the majority of documented in-hospital falls occurred in this group, supporting the clinical relevance of fall risk assessment in ophthalmology wards.

Visual impairment is a well-established independent risk factor for falls. Vision plays a crucial role in postural stability, spatial orientation, and obstacle avoidance. Reduced visual acuity, impaired contrast sensitivity, and loss of binocular vision significantly compromise balance and gait. Previous studies have demonstrated that individuals with visual impairment have a two- to threefold increased risk of falls compared to those with normal vision [1,2].

Ophthalmic patients often experience these deficits acutely or chronically, placing them at heightened risk during hospitalization. In the present study, advanced age was significantly associated with higher fall risk. This finding is consistent with existing literature, which identifies age-related decline in vision, proprioception, muscle strength, and reaction time as contributors to falls [3].

Elderly ophthalmic patients frequently have multiple systemic comorbidities and are more likely to require ambulatory aids - factors that are incorporated into the MFS and further elevate fall risk. Severe visual impairment (best-corrected visual acuity worse than 6/60) and bilateral ocular disease were strongly associated with high fall risk in this study. Visual field loss is the primary vision component that is affecting risk of falls. [4].

Patients with bilateral cataract, glaucoma, retinal disorders, or corneal pathology may therefore be particularly vulnerable during inpatient care. Postoperative status was another significant predictor of high fall risk. Ophthalmic surgeries often result in temporary visual obstruction due to eye patching, bandaging, or postoperative blurring. Additionally, the effects of sedation, analgesics, and restricted mobility further increase instability in the immediate postoperative period. Previous studies have emphasized that postoperative ophthalmic patients require heightened supervision, especially during ambulation to bathrooms and corridors [5,6].

The Morse Fall Scale demonstrated good practical utility in stratifying fall risk among ophthalmic inpatients. More than 80% of documented falls occurred in patients categorized as high risk, indicating reasonable predictive validity in this population. Although the MFS was originally designed for general medical and surgical patients, its components—such as gait instability, use of ambulatory aids, and mental status—remain relevant in ophthalmic patients as well [7].

However, the MFS does not include vision-specific parameters such as visual acuity, contrast sensitivity, or visual field loss. Several authors have suggested that incorporating sensory impairment into fall risk assessment tools may improve predictive accuracy, particularly in specialized populations [8,9].

The findings of this study support the need for ophthalmology-specific fall prevention protocols that complement existing tools like the MFS. Routine implementation of fall risk assessment at admission, combined with targeted preventive measures—such as assisted ambulation, adequate lighting, removal of environmental hazards, patient education, and staff awareness—can significantly reduce fall-related morbidity. Multidisciplinary involvement, including nursing staff and caregivers, is essential to ensure effective fall prevention in ophthalmology wards [10].

Limitations

- Retrospective study design
- Dependence on accuracy of medical records
- Vision-specific fall risk factors were not independently assessed

CONCLUSION

A considerable proportion of ophthalmic inpatients are at moderate to high risk of falls. The Morse Fall Scale is a feasible and effective tool for fall risk assessment in ophthalmic patients. Routine screening and implementation of targeted fall prevention strategies are essential to enhance patient safety in ophthalmology inpatient care.

CLINICAL IMPLICATIONS

Early identification of high-risk ophthalmic patients allows timely implementation of preventive interventions, including assisted ambulation, environmental modification, and patient education, thereby reducing fall-related morbidity.

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