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Original Research Article

Prevalence of visual impairment in patients sustaining proximal hip fracture after a simple fall

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ABSTRACT

Background: According to epidemiological studies, the 30% of aged 75 years and older is having impaired vision and most of the cases these patients are not in contact of the hospital care staff and community eye services. The visual assessment of older people is essential and helps to minimize the issues related to fall that led to critical problem. The proper vision is required for regain independence and improve the patient's overall wellbeing. This kind of situation is leading the individual to unintentional injury which is higher among the visually impaired people compared to fully sighted population. Moreover, there are two major reasons for visual impairment that are more susceptible.
Aim: The study aims to analyze the prevalence of visual impairment in patients sustaining proximal hip fracture after a simple fall at SCB Medical College and Hospital, Cuttack, Odisha.
Materials and Methods: The current study has been conducted at SCB Medical College and Hospital, Cuttack, Odisha. All inpatients of the orthopaedic rehabilitation wards were recuperating from the surgical repair of a fractured neck of femur aged 75 years and above. and all the visual impairment assessed at Ophthalmology OPD. Moreover, the investigator has also invited the patients who sustained their fracture after a simple slip, trip and fall. Apart from this, the mental test of these participants was also done to analyze the ability. In this test the score of seven and above was considered for allowing the patients to take part in the study. There was a full ocular examination of anterior and posterior segment performed by the ophthalmologist using the slit-lamp bio microscope and indirect ophthalmoscope.
Results: Visual impairment of criteria 1 sensitivity was 93% and specificity was 91%. Moreover, the likelihood ratio of positive results was 11 and negative result was 0.05. For the criteria 2 the sensitivity was 97% and specificity was 86%. Moreover, the likelihood of positive results was 6 and negative result was 0.02. Apart from this detection of potentially remedial visual impairment sensitivity was 69% and specificity was 91%. The likelihood ratio of positive result was 8 and negative result was 0.2.
Conclusion: The vision test and proper ocular examination were underestimated the extent of vision impairment in older adults. As per the outcome of the study, the visual impairment is common in elderly patients with a history of falls. Moreover, the study has suggested that to measure the visual acuity of all elderly patients recuperating from a proximal hip fracture after a simple fall.

1. Background

Hip fracture is complex issue that requires the extensive care and support for recovery of the patients. The visual

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impairment is an important independent predictor of the risk in the hip fracture. For elderly people, the visual impairment is involving different aspects and processes that influence the recovery.[1] According to epidemiological studies, the 30% of aged 75 years and older is having impaired vision and most of the cases these patients are not in contact of the hospital care staff and community eye services.[2] These studies have also suggested that patients with impaired vision have fractured neck of femur after fall.[2,3] The visual impairment is leading these patients to disability and affecting the body function and creating issues for managing the daily life work.[4]

The visual assessment and proper ocular examination of older people is essential and helps to minimize the issues related to fall that led to critical problem. The proper vision is required for regain independence and improve the patient's overall well-being.[5,6] According to clinical analysis, the falls are multi factor in origin and probably results of interaction between intrinsic and environmental factors.[7] This kind of situation is leading the individual to unintentional injury which is higher among the visually impaired people compared to fully sighted population. Moreover, there are two major reasons for visual impairment that are more susceptible.[8] The poor vision is leading them to potential hazard in different conditions such as oncoming traffic, home environment and workplace.[9] The visual risk factors are involving the risks such as contrast sensitivity, poor depth perception, self-reported poor vision and visual field loss. Now, the consideration of these issues and management of the resources and strategies to meet the needs of the people is essential that will help to improve the health conditions of the individual and support them to maintain the healthy lifestyle.[10]

2. Aim

The study aims to analyze the prevalence of visual impairment in patients sustaining proximal hip fracture after a simple fall at SCB Medical College and Hospital, Cuttack, Odisha.

3. Materials and Methods

The current study has been conducted at SCB Medical College and Hospital, Cuttack, Odisha. All inpatients of the orthopaedic rehabilitation wards were recuperating from the recovery of fracture aged 75 years and above. And all the visual impairment assessed at Ophthalmology OPD. These are approached for participating the study. Moreover, the investigator has also invited the patients who sustained their fracture. Apart from this, the mental test of these participants was also done to analyze the ability. In this test the score of seven and above was considered for allowing the patients to take part in the study. There was a full ocular examination of anterior and posterior segment performed by the ophthalmologist using the slit-lamp bio microscope and indirect ophthalmoscope. In addition to this, the vision of patients was recorded using a Snellen chart from 6meter distance. The visual acuity of an individual was measured for each eye separately considering with & without spectacles for distance vision. Apart from this, the visual field analysis in each eye was evaluated and the confrontation test was also assessed to find the impaired vision.

To complete the study, the patients were also independently examined by senior ophthalmologists. This examination was based on the gold standard focusing on the screening results of different eye problem. For the current study, the patients were examined to have any impaired vision after best corrected visual acuity test. However, it was found patients have worse than 6/24 vision and some of them had visual loos in both eyes. The referral criteria is used for analyzing the conditions of the patients. Here, the criteria one is consideration of distance visual acuity using single or both eyes after spectacle correction. If any patients had worse than 6/24 were screened for high risk groups. Second criteria is considered for analyzing the conditions of patients was involving the cataract, uncorrected refractive error, glaucoma or the presence of homonymous hemianopia.

4. Results

For the current study, there were 90 patients were analyzed by ophthalmologists and nurse screener over 8 months of period at SCB Medical College and Hospital, Cuttack. According to analysis, the mean age of the patients was 84 years and range between 75-97 years. For the analysis, the investigator has involved 75 female and 15 male patients. By considering the criteria, the 55 patients were having impaired vision as per the examination of ophthalmologist and 40 patients were having the remedial vision. The common cause of visual impairment was cataract, glaucoma and uncorrected refractive errors. Moreover, the age-related macular degeneration was found among the 10 patients. Apart from this, 55 patients have the visual acuity of 6/60 and having serious vision loss in one eye. Here, some of the patients were having refractive errors due to induced index myopia that caused by the early nuclear sclerotic cataracts.

According to analysis of the nurse screener, considering the criteria 1 it has been found that 52 patients were having the impaired vision. The additional assessment of uncorrected refractive errors, red reflex for dense cataract and significant field defect for glaucoma, considering the criteria 2 was identified in 3 patients. As per the table, visual impairment of criteria 1 sensitivity was 93% and specificity was 91%. Moreover, the likelihood ratio of positive results was 11 and negative result was 0.05. For the criteria 2 the sensitivity was 97% and specificity was 86%. Moreover, the likelihood of positive results was 6 and negative result

Table 1:

	Sensitivity (95% CI)	Specificity (95% CI)	Likelihood ratio of a positive result	Likelihood ratio of negative result
Detection of visual impairment (Criteria 1)	93% (88-99%)	91% (85-97%)	11	0.05
Detection of visual impairment (Criteria 2)	97% (95-100%)	86% (78-91%)	6	0.02
Detection of potentially remedial visual impairment	69% (60-81%)	91% (85-98%)	8	0.2

was 0.02. Apart from this detection of potentially remedial visual impairment sensitivity was 69% and specificity was 91%. The likelihood ratio of positive result was 8 and negative result was 0.2.

The nurse screener has found 30 out of 40 patients who were having potential remedial visual impairment. The inadequacy of the test is considered for analyzing the early cataracts in red reflex that is useful for identifying the potential patients missed by the nurse. Apart from this, the nurse screener has detected the red reflex in isolation and components of the test had sensitivity of 41% (±15% 95% CI) and specificity of 95% (±5% 95% CI).

5. Discussion

The visual assessment of older people is essential and helps to minimize the issues related to fall that led to critical problem. The proper vision is required for regain independence and improve the patient's overall wellbeing.[11] According to clinical analysis, the falls are multifactor in origin and probably results of interaction between intrinsic and environmental factors.[12] This kind of situation is leading the individual to unintentional injury which is higher among the visually impaired people compared to fully sighted population. Moreover, there are two major reasons for visual impairment that are more susceptible. According to analysis, the mean age of the patients was 84 years and range between 75-97 years. For the analysis, the investigator has involved 75 female and 15 male patients. Moreover, the age-related macular degeneration was found among the 10 patients.

According to Segevall, Söderberg and Randström (2019),[13] the vision of patients was recorded using a Snellen chart from 6meter distance. The visual acuity for distance were measured for both eye and also separately for each eye considering with or without spectacle. Apart from this, the visual field analysis in each eye was evaluated and confrontation test was also assessed to find the impaired vision. However, it was worse than 6/24 and some of have found significant visual field loss in both eyes.[14,15]

As per the outcome of the current study, visual impairment of criteria 1 sensitivity was 93% and specificity was 91%. Moreover, the likelihood ratio of positive results was 11 and negative result was 0.05. For the criteria 2 the sensitivity was 97% and specificity was 86%. Moreover, the likelihood of positive results was 6 and negative result was 0.02. Apart from this detection of potentially remedial visual impairment sensitivity was 69% and specificity was 91%. The likelihood ratio of positive result was 8 and negative result was 0.2.

6. Conclusion

From the analysis of the study, two-third of the patient were examined and not having the good vision impairment. The vision test was underestimated the extent of vision impairment in older adults. As per the outcome of the study, the visual impairment is common in elderly patients with a history of falls. Moreover, the study has suggested that measurement of distance visual acuity is essential for the aged people to minimize the incidents of the hip fracture due to simple fall and trip.

7. Conflict of Interest

None.

8. Source of Funding

None.

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