

**Effect of socio-demographic characteristics on peri-operative mortality in Fracture Neck of Femur in elderly patients [60 years and above]**

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**Abstract**

**Background:** Hip fractures in elderly patients are serious injuries that can lead to immobility and permanent dependence, negatively impacting patients’ quality of life and resulting in a financial burden for health systems and societies. Hip fractures can also lead to death.

**Methods:** The present study was conducted in patients with fractures neck of femur (age 60 years and above) presenting to the Department of Orthopaedics, Dr RPGMC Kangra at Tanda. All cases presenting to the department and fulfilling the criteria were studied for a period of one year starting from the date of start of the study.

**Results:** Our study observed that mean age of the patients in group A, group B, and group C was 77.00±11.18 years, 78.00±12.03 years, and 70.78±8.35 years. The mean age was found to be statistically non-significant between the patients (P=0.060). Our study observed that more than half of the patients (60%) in

group A were females while all the patients in group B were females. Our study did not observe any statistically significant difference in sex-based survival of the patients (P=0.142).

**Conclusion:** We found that perioperative mortality was significantly influenced by BMI of patients. Age and Sex did not significantly influenced the perioperative mortality.

**Keywords:** Mortality, Hip, Fracture, Age, Sex.

**Introduction**

Hip fractures in elderly patients are serious injuries that can lead to immobility and permanent dependence, negatively impacting patients’ quality of life and resulting in a financial burden for health systems and societies. Hip fractures can also lead to death.<sup>1</sup> Mortality rates among the elderly following hip fractures range between 14% and 36% within one year of the injury.<sup>2,3</sup> During the first three months after hip fracture, elderly patients have a 5- to 8-fold increased risk of dying.<sup>4</sup> The increased mortality risk persists up

to ten years. Because of a predicted increase in life expectancy in western countries over the next decades, hip fractures and their consequences will have an even larger impact on health systems and societies in the future.

Factors that influence prognosis of elderly patients after hip fracture are age, gender, comorbidities, anticoagulation therapy, and general physical health status at the time of injury.<sup>5</sup> Furthermore, timing of surgery is thought to play an important role regarding survival. Although international clinical practice guidelines recommend surgical treatment of acute hip fracture within 24 to 48 hours after admission, these recommendations are still discussed controversially.<sup>6,7</sup> Some researchers argue that early surgery can lead to an increased risk of perioperative complications, including pneumonia, deep venous thrombosis, bleeding, pulmonary embolism, urinary tract infections, and decubital ulcerations because clinicians do not have enough time to optimize patients' medical conditions preoperatively.<sup>8</sup>

### Material and method

The present study was conducted in patients with fractures neck of femur (age 60 years and above) presenting to the Department of Orthopaedics, Dr RPGMC Kangra at Tanda.

All cases presenting to the department and fulfilling the criteria were studied for a period of one year starting from the date of start of the study. The study was initiated following approval from Institutional Ethics Committee. The patients were given the right to abstain from participation in the study or to withdraw at any time of the study without reprisal.

### Inclusion criteria

All patients of fractures neck of femur 60 years and above.

### Exclusion criteria

1. concomitant trauma involving other systems
2. associated fracture of the pelvis
3. bilateral hip fracture
4. pathological fracture
5. did not give consent to participate in the study

After a detailed history, patients were clinically evaluated at the time of admission. Demographic data of the patients such as age, sex, pre-existing comorbidities, type of fracture, degree of osteoporosis and type of surgical procedure were recorded. For classification of co-morbidities in the study population, the American Society of Anesthesiologist (ASA) score was used which is as follows:

- Patient is a completely healthy fit patient.
- Patient has mild systemic disease.
- Patient has severe systemic disease that is not incapacitating.
- Patient has incapacitating disease that is a constant threat to life.

### Statistical analysis

The data were presented as frequency, percentages or mean $\pm$ SD whereas applicable. Student t-test was used to compare continuous variables between 2 groups. Chi-square test was used to compare categorical variables. P value <0.05 was considered significant. Statistical analysis was performed using SPSS v21.

### Results

The present study was aimed to determine perioperative mortality in fractures of neck of femur in the elderly patients presenting to the Department of Orthopaedics at Dr RPGMC Tanda over the period of

one year. A total of 90 patients were included in the study. Results of the study have been described below:

A total of 90 patients with fracture neck of femur were included in the study over a period of one year.

Sociodemographic characteristics include age, sex, residence, and socioeconomic status.

Table 1: Sociodemographic characteristics of study participants (n=90).

Sociodemographic characteristics		n	%
Age (Years)	61-70	44	48.89
	71-80	25	27.78
	81-90	20	22.22
	91-100	1	1.11
Sex	Male	34	37.78
	Female	56	62.22
Residence	Rural	72	80
	Urban	18	20
Kuppuswamy Scale (Urban) (n=18)	I	8	44.45
	II	5	27.78
	III	5	27.78
Udai Pareekh Scale (Rural) (n=72)	I	2	2.78
	II	3	4.16
	III	20	27.78
	IV	43	59.72
	V	4	5.55

Age-based distribution of study participants has been shown in table 1. Our study observed that majority of the patients (n=44/90; 48.9%) were in age-group 61-70 years followed by 27.8% (n=25/90) patients in 71-80 years and 22.2% (n=20/90) in 81-90 years. Only one

patient aged above 90 years. Our study observed that majority 62% (n=56/90) of the patients were females while remaining 38% (n=34/90) of the patients were males.

Table 2: Distribution of sociodemographic characteristics of the patients (n=90).

	Group A (n=5)	Group B (n=6)	Group C (n=79)	P Value
Age	77.00±11.18	78.00±12.03	70.78±8.35	0.060
Sex (Male: Female)	2:3	0:6	32:47	0.142
Residence (Rural: Urban)	4:1	6:0	62:17	0.446
BMI	19.58±2.99	17.86±0.93	20.96±2.69	0.016
Arm Circumference	22.20±3.63	20.00±2.19	23.08±3.33	0.084
Hospital stay	15.80±3.11	20.50±8.37	17.05±7.08	0.463

Our study observed that mean age of the patients in group A, group B, and group C was  $77.00 \pm 11.18$  years,  $78.00 \pm 12.03$  years, and  $70.78 \pm 8.35$  years. The mean age was found to be statistically non-significant between the patients ( $P=0.060$ ). Our study observed that more than half of the patients (60%) in group A were females while all the patients in group B were females. Our study did not observe any statistically significant difference in sex-based survival of the patients ( $P=0.142$ ).

### Discussion

The present study was aimed to determine perioperative mortality in fractures of neck of femur in the patients (age 60 years and above) presenting to the Department of Orthopaedics, Dr RPGMC Kangra at Tanda.

All cases presenting to the department and fulfilling the criteria were studied for a period of one year starting from the date of start of the study. The study was initiated following approval from Institutional Ethics Committee. Patients fulfilling inclusion criteria were evaluated in detail at time of admission. Demographic data of the patients such as age, sex, pre-existing comorbidities, type of fracture, degree of osteoporosis and type of surgical procedure were recorded.

All data concerning the type of surgery, hospital stay and perioperative mortality was collected. After surgery patients were discharged on the fourth day if the clinical conditions permitted. The telephone number of the investigator was marked on discharge card. The patients were followed up in OPD on the 15<sup>th</sup> postoperative day for sutures removal and further on 45<sup>th</sup> and 90<sup>th</sup> postoperative day for assessment of functional ability.

Our results also demonstrated that the risk of death increased by 25% as age increased, with no differences between sexes. Butler et al.<sup>45</sup> in their review of the literature demonstrated that age, gender, cognitive impairment and functional capacity prior to injury were associated with mortality rate. This was affirmed by Erickson et al.<sup>12</sup> who found that 90% of the deaths in their population occurred in patients greater than 75 years of age.

In our study, age, sex, socioeconomic status, BMI, and arm circumference were comparable in the non-survivors and survived patients. Urea levels were significantly higher in died patients. It has been suggested mortality is significantly influenced by preoperative cognitive state, medical comorbidities and mobility. Dementia, chronic obstructive pulmonary disease, chest infection, heart failure, anemia, abnormal sodium (low or raised), elevated urea, elevated creatinine and malignancy, have all been described as risk factors for increased mortality in the months following a hip fracture. However, in our study only elevated urea levels were observed. Increased urea levels as a predictor of 30-day mortality has been reported earlier by Sheikh et al.<sup>9</sup>

### Conclusion

We found that perioperative mortality was significantly influenced by BMI of patients. Age and Sex did not significantly influenced the perioperative mortality.

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