

Disease Pattern among the Patients Attending the Department Of Orthopedics, JRRMCH, Sylhet, Bangladesh.

Sumon Mallick¹, Cyrus Sakiba², Lata Majumder³, Nuruddin Ahmed⁴, Mohammad Abdul Wadud⁵, Muntaha Arefin⁶, Mohammed Abdullah al Mahmud⁷, Mumit Ahmed⁸, ABM Badrudduza⁹

¹ Dr. Sumon Mallik, MBBS, MS -Associate Professor –Department of Orthopedics, Jalalabad Ragib Rabeya Medical College Hospital)

² Professor & Head-Department of Orthopedics- Jalalabad Ragib Rabeya Medical College Hospital

³ Junior Consultant –Department of Orthopedics, Jalalabad Ragib Rabeya Medical College Hospital.

⁴ Assistant Professor (retd)-Department of orthopedics, Sylhet MAG Osmani Medical College Hospital, Sylhet.

⁵ Indoor Medical Officer-Orthopedics department, Jalalabad Ragib Rabeya Medical College Hospital, Sylhet.

⁶ M.Phil (Anatomy) student, Sylhet M.A.G Osmani Medical College Hospital, Sylhet.

⁷ Medical Officer, Lions Children's Hospital, Sylhet

^{8,9} Assistant Register, Department of orthopaedics, Jalalabad Ragib Rabeya Medical College Hospital, Sylhet.

Abstract:

Introduction: Over the last 48 years since independence, Bangladesh has made lot of strides in the Health Sector. ¹A huge and thriving network of private physicians stretched and spread to all over the country is trying to meet the needs of day to day medical problems. ²In every day, there have a huge number of patients attending in the department of orthopedics, JRRMCH, Sylhet. Diseases along with different consequences considers their pattern and recovery in the hospital. Objective: The study was to identify the disease pattern of the patients and its epidemiologic and demographic analysis who are coming to receive service from the hospitals. Methods: The study was retrospective by nature and performed in the department of Orthopedics, Jalalabad Ragib Rabeya Medical College hospital (JRRMCH), during the period of January 2017 to November 2017. During the study, there are 4000 attended in the outdoor department and 1519 patients admitted into indoor and also follow up 400 indoor patients. Results: we observed that About 1519 patients were admitted within this time period... Of 1519 patients 1022(67%) were male, 497(33%) were female. Fracture cases were 844(56%), where 543 (64%) Male and 301 (36%) are female. non-fracture cases were 675(44%). Where 479 (71%) were male and 196(29%) were female. We found that 174(11%) and 150(10%) of the patients are shown their fracture in hip and foot and 18%(269) were from others region in the body. Almost at all regions in case of both fracture and non-fracture cases, males are more affected than females with some exceptions such as in case of fracture, female cases are more at hip (63%) and wrist region (29%) and in case of non-fracture, female cases are more at elbow (51%). Conclusion: In case of both fracture and non-fracture, male cases are larger than female in total. This is may be due to more involvement of men especially of middle aged in different outdoor as well as heavy and risky deeds. Females are opposite to that situations and are supported by the hormone oestrogen. Maximum fracture cases are in the age group of 50+ years (32%), then 25-49 years (27%), 5-14 years (23%). Maximum non fracture cases are in the age group of 25-49 years (37%), then 50+ years (25%), 15-24 years (20%). Maximum male fractures occur at age 25-49 years but maximum female fractures occur at age 50+ years. Second largest male fracture age group is 5-14 years. Female fracture ratios in comparison with the top two fracture ages of males are too low which is very amazing. The elbow and forearm with wrist are more likely part of the body to be injured. ³As sport activities increase, the fractures in children increase as well, especially for boys.

Key Words: Fracture, oestrogen, elbow, osteoporosis, Postoperative

Date of Submission: 30-12-2019

Date of Acceptance: 14-01-2020

I. Introduction

Background:

Healthcare Service delivery is severely affected by poor socioeconomic status of this region. ⁴People cannot easily avail the services in developing countries due to lack of specialized hospital and physicians in the community. ⁵The effect of these factors on patient health and the quality of orthopedic surgery and care over the

past 20 years knocked the consequences.⁶ With regards to accessing care and surgery, Orthopaedics unit are most life savings unit and focusing the quality of care received by patients and affect the postoperative outcomes.⁷

The history of orthopaedic surgery in the country goes back to the early '60s. Before 1963, orthopaedic surgery used to be practiced by the general surgeons. In 1963, the first orthopaedic unit emerged at Dhaka Medical College Hospital. Till 1972, two more orthopaedic units were started at two other medical college hospitals in the country. The development of this specialty took place immediately after the war of liberation in 1971. In February 1972 Dr. R.J.Garst, FACS an American orthopaedic surgeon came forward to help take care of the injured freedom fighters. He started his work in Shaheed Suhrawardy Hospital at Dhaka with 100 beds.⁸ In the early day's volunteers from all over the world came to our help. They included orthopaedic surgeons, plastic surgeons, specialized nurses, physiotherapists, occupational therapists, & limb-brace makers. The services of Orthopedic Overseas and World Orthopaedic Concern particularly need to be mentioned in this respect. Diploma in Orthopaedics (D.Orth) & Masters of Surgery in Orthopaedics (M.S.Orth) course affiliated to the University of Dhaka was approved in October 1973. Rehabilitation Institute & Hospital for the Disabled (RIHD) started operating in April 1978. This is a 500 bed orthopaedic & trauma hospital and teaching institute. The number of teaching staff is 37. The number of postgraduate trainees at any time are usually over 50. The name of this institute was changed to National Institute of Traumatology & Orthopaedic Rehabilitation (NITOR) in October 2002.⁹ Jalalabad Ragib Rabeya Medical College hospital was situated in Sylhet division located in the heart of Sylhet where a lot patients coming from nearest town, village, subdistrict and also from different corners of the Sylhet division. The patients attending this department are newly admitted or referred from other out and in-patient departments and also from private practitioners and different specialists.

Orthopedic fractures are a common daily acute health issue. Improper initial management of fractures can lead to significant long-term morbidity and, potentially, mortality.¹⁰ With the burden of musculoskeletal disease at the forefront of health care worldwide, the World Health Organization (WHO) declared 2000-2010 the Bone and Joint Decade (BJD). Since the BJD, the focus on orthopedic health has continued, with the WHO subsequently declaring a "Decade of Action for Road Safety 2011-2020," recognizing that death and disability from traffic trauma is a major public health issue worldwide.¹¹

Objective:

The study was carried out to identify the demographic evidence and clinical profile among the patients attending the orthopedics department, JRRMCH, Sylhet.

II. Material And Methods

Methods & Materials:

This study was based on hospital records of the patients preserved in the department of Orthopedics, JRRMCH. During visited in the hospital outdoor, A lot of patients came to outdoor for getting treatment and some were admitted in the hospital. On attending the department, a thorough history of the patient was taken and physical examinations were done, necessary investigations were advised and sometimes patients were also referred to some other departments like medicine, cardiology, physical medicine for confirmation of diagnosis and management purpose.

Study Design: The study was retrospective study carried out in the JRRMCH .

Study Location: The study was conducted in orthopedics department, JRRMCH .This was a tertiary care hospital include medical college. where department of orthopedics unit conducted the study. The study has included the patients who came to receive treatments from outdoor department and after that admitted in the indoor hospital.

Study Duration: January 2015 to December 2015.

Sample size and methodology: As the study was retrospective, we have identified 4000 patients attended in the outdoor department and out of these patients, 1519 are admitted in the indoor hospital. We collected data from those patients and gather their record and during admission, a questionnaire, informed consent form and follow up issue was properly documented and guided.

Inclusion criteria:

1. Patients who was admitted indoor through referred by outdoor department.
2. Either sex
3. All patients irrespective of age, sex and others.

Exclusion criteria:

1. Patients who did not admitted without referred by Outdoor department.

Statistical analysis

Data was analyzed using SPSS version 20 (SPSS Inc) and excel.

The level $P < 0.05$ was considered as the cutoff value or significance.

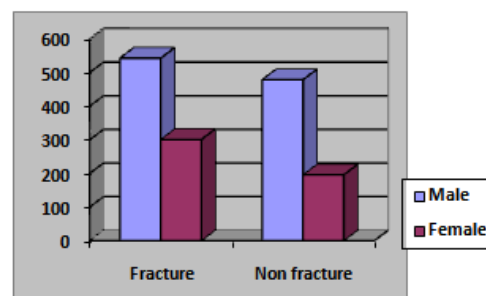
III. Result

Total number of patient was 1519. Among them 67% were male and 33% were female (table 1 , Chart 1). Here fracture cases were 844(56%), non-fracture cases were 675(44%). Male cases are more in case of both fracture and non-fracture cases.

Table 1: Sex distribution with fracture & non fracture cases

Sex	Number	fracture	%	Non fracture	%
Male	1022(67%)	543(64%)	53%	479(71%)	47%
Female	497(33%)	301(36%)	61%	196(29%)	39%
Total	1519	844	56%	675	44%

Chart 1 : Sex distribution of cases



Regional distribution of cases is showing fracture and non-fracture cases in a specific region. (Table 2, Chart 2). Largest regional involvement is hip , 174(11%) excluding "Others" as it is not specified to any region. Largest regional involvement in case of fracture is also hip, 152(18%) and in case of non-fracture is foot, 89 (13%). Male fractures occur maximum at forearm (84 cases) and female at hip (96 cases). Largest nonfracture region in case of both male and female is foot (62 and 27 cases respectively). Almost at all regions in case of both fracture and non fracture cases, males are more affected than females with some exceptions such as in case of fracture, female cases are more at hip (63%) and wrist region (29%) and in case of non fracture, female cases are more at elbow (51%).

Table 2: Regional distribution of cases

Regions	Grand total	Fracture			%	Non fracture			%
		Male	Female	Total		Male	Female	Total	
shoulder	49(3%)	11(55%)	9(45%)	20(41%)	2%	25(86%)	4(14%)	29(59%)	4%
Arm	32(2%)	20(67%)	10(33%)	30(94%)	4%	2(100%)	0(0%)	2(6%)	1%
Elbow	130(9%)	62(65%)	33(35%)	95(73%)	11%	17(49%)	18(51%)	35(27%)	5%
Forearm	119(8%)	87(84%)	17(16%)	104(87%)	12%	12(72%)	4(28%)	16(13%)	2%
Wrist	55(3%)	23(44%)	29(56%)	52(96%)	6%	1(50%)	1(50%)	2(4%)	1%
Hand	103(7%)	46(85%)	8(15%)	54(52%)	6%	38(78%)	11(22%)	49(48%)	7%
Hip	174(11%)	56(37%)	96(63%)	152(87%)	18%	14(64%)	8(36%)	22(13%)	3%
Thigh	70(5%)	37(70%)	16(30%)	53(76%)	6%	15(88%)	2(12%)	17(24%)	3%
Knee	77(5%)	24(65%)	13(35%)	37(48%)	4%	30(75%)	10(25%)	40(52%)	6%
Leg	115(8%)	71(77%)	21(23%)	92(80%)	11%	18(78%)	5(22%)	23(20%)	3%
Ankle	62(4%)	8(62%)	5(38%)	13(21%)	2%	35(79%)	14(21%)	49(79%)	7%
Foot	150(10%)	42(69%)	19(31%)	61(41%)	8%	62(70%)	27(30%)	89(59%)	13%
Trunk	83(5%)	21(57%)	16(43%)	37(45%)	4%	25(54%)	21(46%)	46(55%)	7%
clavicle	31(2%)	23(74%)	8(26%)	31(100%)	4%	0(0%)	0(0%)	0(0%)	0%
Others	269(18%)	12(92%)	1(8%)	13(5%)	2%	185(72%)	71(28%)	256(95%)	38%
Total	1519	543(64%)	301(36%)	844(56%)		479(71%)	196(29%)	675(44%)	

Note : Others involve those cases which are not specified to any region during diagnosis. Percentages of grand total column and separated columns reveal ratios between regions and the rest of the percentages reveal ratios between male and female in a specified region.

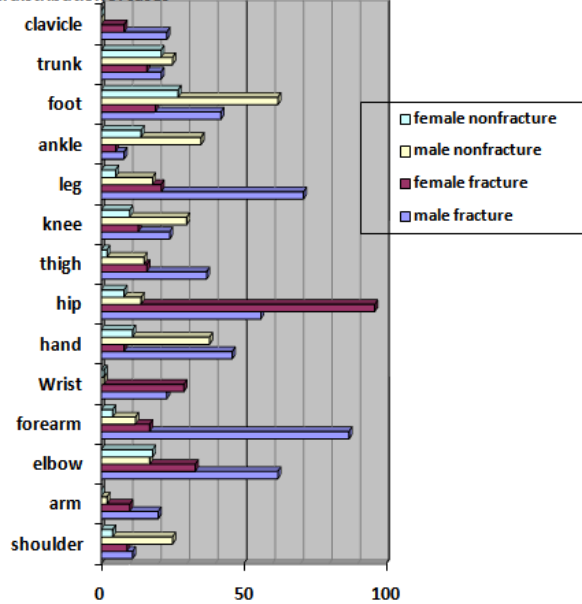
Table 3 and chart 3 show the disease groups of non fracture cases. Here general cases are the usual non fracture cases like sprain, dislocation, cut injury, strain, low back pain etc. 70% of general cases are male and 30% are female. Special cases are the categorized or grouped as tumor, infection, joint inflammation, ulcer, soft tissue injury, PVD, foreign body impaction, epiphyseal injury, CTEV, osteoporosis. Here in all groups, male cases are more except osteoporosis where female cases are more than male (86%). Largest group is infection (33%), then joint inflammation (16%), ulcer (10%), soft tissue injury (10%), and tumor (9%).

Table 3: Disease groups of non-fracture cases

		Male	Female	Grand total
Non fracture	Total	479(71%)	196(29%)	675
General cases	Sprain, dislocation, cut injury, laceration, abrasion, strain, pain such as low back pain etc	301(70%)	129(30%)	430(64%)
Special cases	Total	178(73%)	67(27%)	245(36%)
	Tumor	16(76%)	5(24%)	21(9%)
	Infection	60(75%)	22(25%)	82(33%)
	Joint inflammation	32(80%)	8(20%)	40(16%)
	Ulcer	16(67%)	8(33%)	24(10%)
	Soft tissue injury	17(74%)	6(26%)	23(10%)
	PVD	12(86%)	2(14%)	14(6%)
	Foreign body impaction	9(69%)	4(71%)	13(5%)
	Epiphyseal injury	8(62%)	5(38%)	13(5%)
	CTEV	7(88%)	1(12%)	8(3%)
Osteoporosis	1(14%)	6(86%)	7(3%)	

Note : Percentages of grand total column reveal ratios among disease groups and the rest of the percentages reveals ratio between male and female

Chart 2: Regional distribution of cases



Note : Percentages of grand total column reveal ratios among disease groups and the rest of the percentages reveals ratio between male and female

Chart 3: Non fracture cases

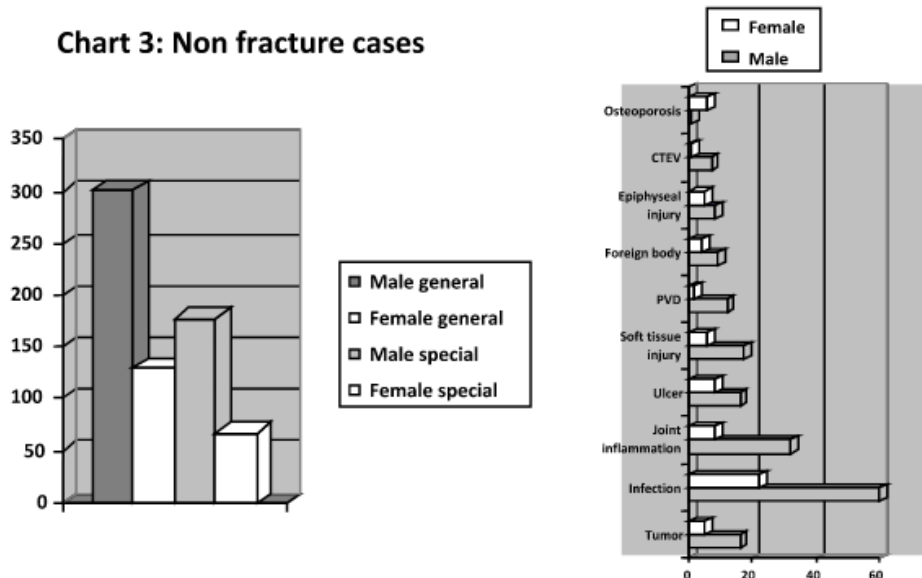


Table 4: Age distribution of patients

Age in year	Grand total Fracture+ Non fracture	fracture				non fracture			
		total	%	male	female	Total	%	Male	Female
1-4	85(6%)	67(79%)	8%	46(69%)	21(31%)	18(21%)	3%	12(67%)	6(33%)
5-14	288(19%)	190(66%)	23%	145(76%)	45(24%)	98(34%)	15%	59(60%)	39(40%)
15-24	222(15%)	84(38%)	10%	70(83%)	14(17%)	138(62%)	20%	109(79%)	29(21%)
25-49	478(31%)	230(48%)	27%	169(73%)	61(27%)	248(52%)	37%	187(75%)	61(25%)
50+	446(29%)	273(61%)	32%	113(41%)	160(59%)	173(39%)	25%	112(65%)	61(35%)

Note: Percentages of grand total column and separated columns reveal ratios between ages and the rest of the percentages reveal ratios between male and female in a specified age.

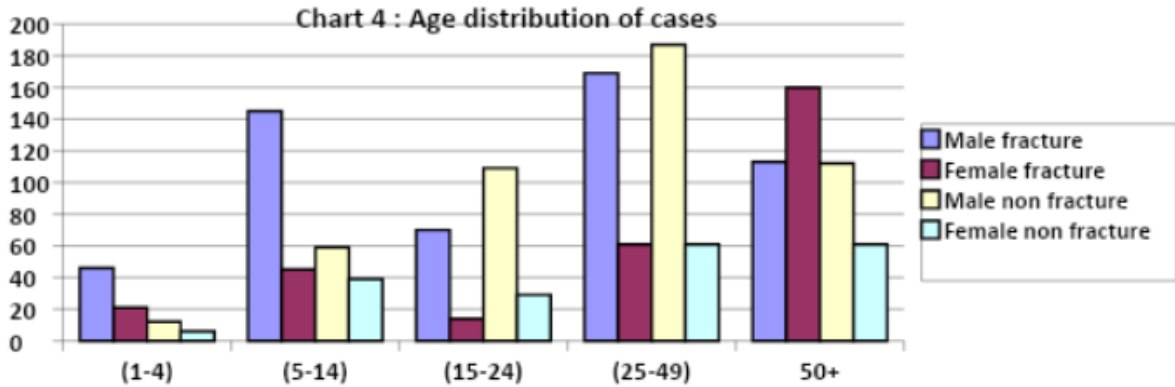


Table 4 and chart 4 reveal the age distribution of cases including both fracture and non fracture with male and female ratios. Largest age group is 25-49 years (31%), almost equal (29%) age group is 50+ years, and smallest age group is 1-4 years (6%). Maximum fracture cases are in the age group of 50+ years (32%), then 25-49 years (27%), 5-14 years (23%). Maximum non fracture cases are in the age group of 25-49 years (37%), then 50+ years (25%), 15-24 years (20%). Maximum male fractures occur at age 25-49 years but maximum female fractures occur at age 50+ years. Second largest male fracture age group is 5-14 years. Female fracture ratios in comparison with the top two fracture ages of males are too low which is very amazing (chart 4). Maximum male non fracture age group is 25-49 years. Then after, male non fracture cases at 15-24 years and 50+ years are almost similar. Maximum female non fracture age group is equal at 25-49 years and 50+ years. In case of both fracture and non fracture, male cases are maximum at 25-49 years.

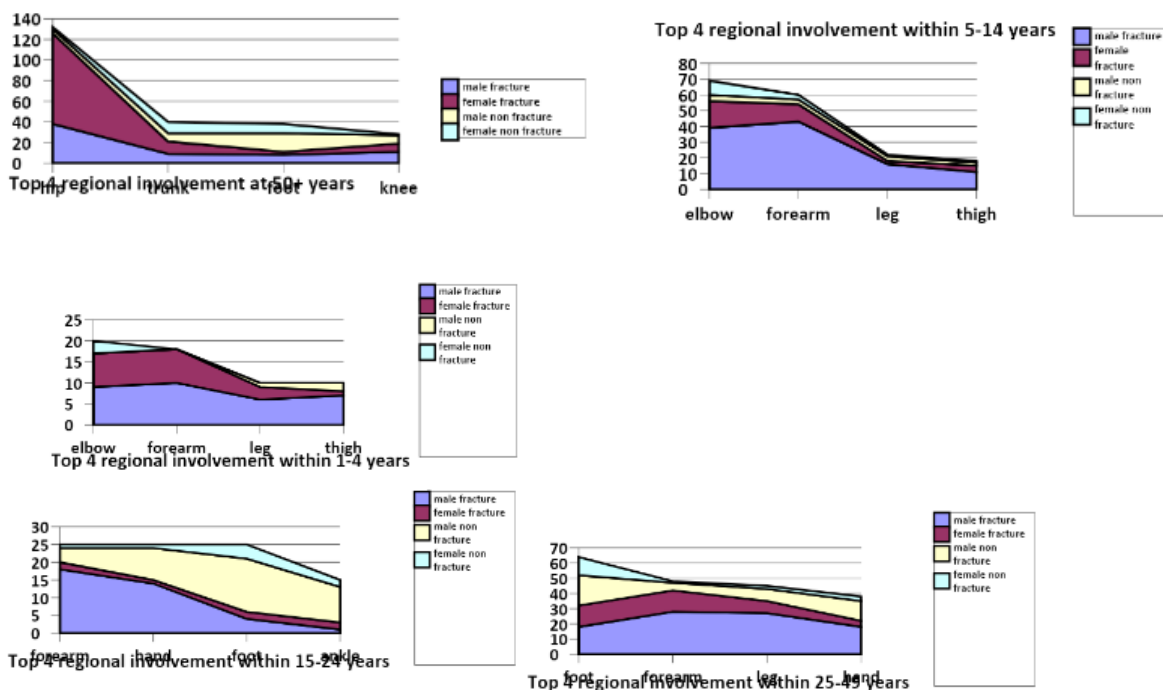


Table 5: Some rare miscellaneous cases:

Male	Age (years)
Benign fibrous histeocytoma	80
ankylosed hip	60
bilateral genu vulgus	22
spinal shock	18
ankylosed hip knee	25
Torus fracture	5
Buerger's disease	37
Female	Age (years)
glomus tumor	32
renal osteodystrophy	80
dupuytrens contracture	73
cubitusvulgus deformity	10
radiculopathy	55
shoulder hand syndrome	35
xenthoma over rt elbow	30

IV. Discussion

Intertrochanteric fracture and fracture neck femur are the top two fracture cases of most common fracture region hip (18%) in which female are more affected (63%). Second most largest fracture region is forearm(12%), where male cases are extremely more in ratio (84%).Fracture shaft radius ulna is the most common fracture at this region. Fracture shaft tibia occurs in the fourth most common fracture region, leg (11%), where males are more affected (77%). Supracondylar fracture is the most common fracture in the third most common fracture region, elbow (11%), where males are more affected (65%).These are the top four fracture involved regions. Then fracture at foot, colles' fracture at wrist, fracture at hand, thigh, clavicle, arm, trunk, knee occur in descending order. Fracture ratio is more in descending order at clavicle (100%), wrist (96%), arm (94%), forearm (87%), hip (87%), leg (80%), thigh (76%), and elbow (73%). Different regional involvements and disease groups at different age groups are written here. Shoulder dislocation occurred maximally within 25-49 years of age. Fracture shaft humerus occurred maximally within 5-14 years of age. Supracondylar fracture occurred maximally within 5-14 years of age. Fracture radius ulna occurred maximally within 5-14 years of age. 80% greenstick fracture occurred within 5-14 years of age. Hand fracture occurred maximally within 25-49 years of age. Intertrochanteric fracture and fracture neck femur occurred maximally at 50+ years of age. Fracture shaft femur occurred maximally within 5-14 years and 25-49 years of age. Patellar fracture occurred maximally at 50+ years of age. Non fracture cases at knee are common within 25-49 years of age. Fracture shaft tibia occurred maximally within 25-49 years of age. Ankle sprain occurred maximally within 25-49 years of age. both fracture and non fracture cases occurred maximally within 25-49 years. Female low back pain occurred maximally at 50+ years of age and male low back pain occurred maximally within 25-49 years of age. Clavicle fracture occurred maximally within 25-49 years. Giant cell tumor occurred maximally within 25-49 years of age. All cases of osteosarcoma occurred within 5-14 years of age. All cases of osteochondroma occurred within 15-24 years of age. Invasive SCC and secondary tumor cases were diagnosed after 25 years of age. Soft tissue injury occurred maximally within 25-49 years of age. Wound infection occurred maximally within 25-49 years of age. Peripheral vascular disease occurred maximally at 50+ years of age. Post operative wound infection occurred maximally within 25-49 years of age. Acute osteomyelitis occurred maximally within 5-14 years of age. Chronic osteomyelitis occurred maximally within 25-49 years and at 50+ years of age. Top four non fracture regions in descending order are foot (13%), ankle (7%), trunk (7%), and hand (7%). Non fracture ratio is more in descending order at ankle (79%), shoulder (59%), foot (59%), trunk (55%), knee (52%).Diabetic foot, ankle sprain, low back pain, cut injury, shoulder dislocation and inflammatory joint condition are the most common cases of the respective regions.

V. Conclusion

In this small retrospective study pattern of diseases attending the department of orthopedics of a private medical college were analyzed. However, for better convenience further studies in different institutes should be performed and a uniform data system should be designed.¹² Public awareness regarding the fracture conditions should be emphasized. In this small retrospective study, some important information can be obtained.

- In case of both fracture and non fracture, male cases are larger than female in total. This is may be due to more involvement of men especially of middle aged in different outdoor as well as heavy and risky deeds. Females are opposite to that situations and are supported by the hormone oestrogen.
- After the age of 50 years, female fracture prevalence is increased with a very extreme ratio. Hip is the most likely part of the body to be injured. This is due to much more loss of bone density more quickly than men due to a decrease in estrogen levels after menopause begins.

- The probability of bone fractures in children increases with age. For a small child, injuries will most likely be minimal because the child doesn't have the speed or mass to cause serious injuries. When age increases, so does mass and speed resulting in more serious. The elbow and forearm with wrist are more likely part of the body to be injured. As sport activities increase, the fractures in children increase as well, especially for boys.
- Different types of infections are seen more in male. This is may be due to the less concern of personal hygiene in male themselves.
- Hip, forearm, elbow, leg are more common fracture region.
- In case of non fracture cases, ankle sprain, shoulder dislocation, foot ulcer and low back pain are more common against fracture cases.

Prevention of fracture:-

- Lighting should not be too dim or too direct, and light switches should be accessible.
- Carpets and rugs should be tacked down.
- Bathrooms should have a chair for bathing or skid-resistant mats, grab bars should be placed where needed and the toilet seat needs to be tall enough for easy transferring.
- Chairs need to be stable (without wheels) and have arm rests.
- Kitchen items that are frequently used should be at waist level or on low shelves, a rubber mat should be placed in front of the sink and non-slip wax should be used on the floor.
- Stairways need handrails and steps should not be slippery.
- There are several other simple suggestions that can help prevent falls and hip fractures. People need to have regular eye-checkups; wear sensible, hard-soled flat shoes; and be mindful of medication's side effects. Individuals can also wear hip padding to minimize the impact of a fall. A doctor can talk with someone about how to increase the bone density through taking supplements, including bisphosphonates for osteoporosis sufferers, calcium, vitamin D, or starting estrogen or hormone replacement therapy.
- Exercise is imperative for preventing falls.

References

-
- [1]. Health Bulletin-2018
 - [2]. <http://banglajol.info/bd/index.php/BMJ/article/download/26356/17685>
 - [3]. Staheli, Lynn, Fundamentals of Pediatric Orthopedics p. 119.
 - [4]. https://apps.who.int/iris/bitstream/handle/10665/85396/9789241505109_eng.pdf;jsessionid=7F4685DE471DDBD5C01B5531EB0E4DA5?sequence=1
 - [5]. WHO Guideline : STRENGTHENING ROAD SAFETY LEGISLATION: A practice and resource manual for countries
 - [6]. Resolution A/RES/66/260. Improving Global Road Safety. Sixty-sixth session of the United Nations General Assembly, New York, 23 May 2012 (<http://www.un.org/en/ga/66/resolutions.shtml>, accessed 6 June 2013)
 - [7]. J Am AcadOrthop Surg. 2018;26(23):823-832.
 - [8]. National Institute of Traumatology &Orthopaedic Rehabilitation (NITOR)(<http://www.bosbd.org/general-information.html>)
 - [9]. <http://bosbd.org/pages/history>
 - [10]. Lidgren L. The bone and joint decade 2000-2010. *Bull World Health Organ.* 2003. 81 (9):629
 - [11]. Strengthening road safety legislation: a practice and resource manual for countries. World Health Organization. Available at http://apps.who.int/iris/bitstream/10665/85396/1/9789241505109_eng.pdf. 2013; Accessed: April 2, 2018.
 - [12]. Marshall D, Johnell O, Wedel H (1996) Meta-analysis of how well measures of bone mineral density predict occurrence of osteoporotic fractures. *BMJ* 312: 1254–1259.