

## THE PREVALENCE OF PHYSICAL INJURIES CAUSED BY THE FALLING ON THE SAME LEVEL OF SURFACE IN ADMITTED PATIENTS IN EMERGENCY DEPARTMENT OF HAFTE TIR MARTYRS HOSPITAL

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### ABSTRACT

According to a new lifestyle and living in an apartments, people paying attention to different exercises and increasing the lifetime of human beings the number of elderly population and use of drugs has been increased on the incidence of falls statistics' have been added daily. Also with regard to health promotion, economic each year, the elderly populations are increasing every year. And in general, results suggest the negative impact of aging population is on the equilibrium level. As age increases the risk of falling and Effects of age-related accumulation are increased. It should be noted that the older people who fell down, due to physiological changes during aging have problems and severe complications more than youth. This can lead to problems of economic, psychological, physical and social, and therefore may reduce the quality of life and death in this population. So it is very important to assess the damages caused by flat falls, in this study attention has been paid on this issue. This is cross - sectional study. The corpus of the study includes of patients admitted to the emergency department of Tehran Hafte Tir Martyrs hospital due to flat fall during the 1391's. The data of the present study has been obtained using the archived files in the Hafte Tir hospital in Tehran. Data collected and after entering information into the computer was analyzed by SPSS software. Overall, 421 people have fallen flat, 6/60% were male and 4/39% were women. The Mean age was 93/47 with a median of 49 years; the average age of women was 95/58 with a median age of 63 and the average age of men were 75/40 years with a median of 34 years. 55/1% had a fall at home 29/7% at work and 11/2% had fallen in public places. The most frequent of patient admission was related to the winter and fall season. 5/9% of people have died. Most injuries were to the limbs and then the skull. The most common injury was the skull and its soft tissue. The Spine injuries were entirely bone injury. The total damage to limb, 50% were soft tissue injuries. It should be noted that, with regard to health and economic promotion of societies, elderly people are increasing every year. And given the rapid increase in the elderly population, Life Expectancy, The need to further planning to increase their level of independence in the lives of people over age of 60 is required. Otherwise, this reduction leads to a decrease in the ability of the individual's level of independence in daily life activities. And thereby the risk of falls and complications of falls is increased that ought to take measures to prevent it.

**KEYWORDS:** Flat Fall, Body Injuries, Soft Tissue Injury, Bone Injury, Physical Injuries

According to a new lifestyle and living in apartment towers and an increase in jobs where they are in high buildings, people bringing attention to the different sports, Increase the human lifespan and increase in the number of elder people in society and increase in drug use, is increasing the fall statistics and its resulting damages day by day. So in America after a motorcycle accident, fall is the second leading cause of unintentional death. Also with regard to health and economic promotion, the elderly populations are increasing every year. Overall, the results suggest a negative effect on the equilibrium level of population is aging. As age increases risk of complications in the elderly population is increased. (4-1).

Therefore, falls in the elderly people are more than youth. In elder people due to the CNS changes and reduced coordination of movements Increased risk of falls. Also brain atrophy reduces the viscoelastic properties of brain tissue and is being prone to damage during trauma. Changes in the physiological mechanisms

of skeletal system - muscle with aging (increased body movements, decreased visual acuity, muscle weakness, slow reflexes sense - movement, decreased proprioception, etc.) are causes the body to slow down the movement and reactions. Resulting in an equilibrium situation in the most affected by mobility, and increases the risk of falls. Loss of balance and falling down as the sixth leading cause of death in the elderly population is usually associated with several complications and disability. (5-7)

One-third of people over 70 years old each year had a fall and women's statistics is high.

Falls at age 85 years, is 3 times more than the age of 85 to 72 years. Three-quarters of them have fear of falling on daily activities, after this falling we will have a disability. 50% of people who are discharged from hospital are needed nursing and 50% of them only live for one year.(8,9)

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It is noted that older people who have fallen, Due to physiological changes during aging problems and complications are more severe than youth that could lead to economic difficulties and high costs, mental, physical and social problems, and therefore reduced quality of life and death in the population.(10,11)

23% of deaths are due to falls in the elderly people and at 85 years of age and more, the rate is rises to 32%. One of the most common causes of non-fatal injuries is fall in the elderly

People. 60% of injuries are resulting in emergency room visits and 80% of injuries are resulting in hospitalization over 65 years of age. Losses from falls in older people for 2020, is estimated at \$ 55 billion. Although the fall is a main cause of disability and increased mortality, 5% of mortality in the elderly people is due to fracture. Elderly people are three times more likely to fall and inter-trochanteric fractures are more common. In America, one out of every five people over age of 65 have fallen to a quarter of them have been damaged. Fracture was 5% fall. Hip fracture is increases with age. Older than 85 years compared to age of 65-60 are 10-15 times more prone to have fractured. 20% of orthopedic beds in England have occupied a femoral neck fracture. Flat fall in the par level can cause severe injuries. The incidence of fractures due to falls in the elderly people is 40%. The rate of hospitalization caused by falling is rises linearly from age 45 years.(9,12&13)

The amount of kinetic energy that enters the body, it can determine the severity of the lesions. Dealing with the kinetic energy is converted to mechanical. Duration of the collision is also effective, as collision time is less the severity of damage is more. Factors affecting the severity of the injury are including: Fall height, surface type, body condition during fall and age. The higher the age, the severity of injury is more.(14,15)

The most common injuries in head are; brain injury and skull fracture. The most common injuries in the body are; rib fractures and lung contusion. The most common injuries in abdomen are; liver, spleen and Hemoperitoneum and the most common injuries in the limbs are including; Hip fracture, femoral fracture, the thoracic spine fractures, a broken arm, and fracture of the lumbar vertebra. (12)

## STUDIES AND ARTICLES IN IRAN

In Ali Rafiee dissertation, the cause of the fall, slipping 67% and 33% of syncope have been reported. Falls from height has been seen mostly in children and active working-age people. Over 50% of deaths from falls are in people over 65 years old. The fall sites were 60% home, 30% public and 10% of elderly people nursing centers. (16)

In Alireze Ghodsi and et al. research, about 675 of fall case were investigated. Falling down the stairs and falls are the most common cause of the falling. The researchers have reported the rate of mortality in the elderly people without affecting sex. (17)

On Majid Akbari and Maryam Aboutorabi dissertation, Epidemiology of injuries resulting from accidents falls in 12 provinces have examined And have reached the conclusion that percent of fall in urban is two times more than rural areas And deaths from falls in people over 70 years has increased significantly. Falling in the early hours of 8 am to 12noon had the highest rate.

Falling in summer is out breaking more than winter. Average age of fall was 26 years old in men and 37 years old in women and it is more in married than singles. Approximately 25% of falls is resulting in hospitalization. The highest rate of falling has happened at home. Most of the women fell while walking and while the men were doing activities. Sudden death due to falls in men, the inhabitants of the town, married and unintentional cases were more. (18)

In Zahra Safavi Bayat research, Risk factors contributing to falls among the elderly patients who were admitted to an aged care facility in Tehran were investigated. It was found that only 30% of elderly people in nursing homes have good balance and walking.(19)

In article and the research of Shahrokh Yousefzade has investigated epidemiology and causes of injuries in hospitalized patients in Rasht PourSina hospital in 2005.

Falling has been introduced as second leading cause of injury hospitalization in trauma patients.

The most common injuries in the head and neck, 80%, pelvis and limbs 25% and severe brain injury was 11 %. (20)

In the research and paper of Akbar Kamrani and Ahmad Ali Azadi, is studied the fall properties in elderly people who are residents in nursing home in 2006. The average age of fall is estimated 76/9 and the ratio of fall of males to females has been 7/51 to 3/48 And 2.6%, are leading to a severe fracture and its complications (Skull and femur).

The falling area has been including; 30% Hospice yard, 28% in elder person room, 18% in the corridor, 14% in Lavatory, 4% in Bathroom. In the terms of timing 45% in the morning and 11% late at night were falling. (21)

### STUDIES AND FOREIGN ARTICLES

Swansburg in 2003 stated that 51% of patients were admitted to the hospital had a fall of bed, 4% while were walking and 7% had a fall of the wheelchair. (22)

Schoenfelder In 2004 reported the average age of fall elderly people is 85 years old.

This study has announced that the rate of fall in women is more than men. 82% versus 18%.

The researchers reported a significant relationship between the widow and the patient fell. (23)

E. Ensrud, in 2013 stated that as the age increases, the rate of bone fractures due to falls increases. Twenty million people are breaking their bone in the year and it costs about 20 million dollars for the world of economic. 40% of fractures are clinically diagnosed vertebral and hip fractures are common. (24)

In 2003 National aging institute, marked weakness of the muscles in the leg is the most important risk factor for falls. Low blood pressure when getting up from the bed is increases the chance of falling. Foot problems and pain raises the possibility of falling. It also raises the risk of drug use, Sensory disorders. The most falling places are in the house and staircase during performing routine activities of life. (25)

ISRN-Epidemiology in 2013 stated that falling down the stairs is the fifth way to hurt in all ages and second in over 65 years. Ankle, talus, Calcaneus, legs, toes, shoulders, primary part of Olena fractures are resulting from falling down the stairs. Socioeconomic deprivation - can increase the rate of fractures. 99% of fractures are in men. Women were older than men with fractures. Fracture increases with age. The mechanism of

injury in most cases over 65 years is simple and is due to falling and after that falling down the stairs. The most common fractures are distal radius and ulna and then ankle and beginning of hip. (26)

The main objective of this study was to obtain information about physical injuries due to falling flat on sex, age, time of falling. Indicates a high risk group and the prevalence of injuries which focus on the prevention and control of risk factors and knowledge are to reduce morbidity and mortality in the general population reveals.

### MATERIALS AND METHODS

This is a cross - sectional study. The corpus of study is patients admitted to the emergency department of Hafte Tir Martyrs hospital who fall flat in Tehran during the 1391's.

This study uses data from files archived in Hafte Tir Martyrs hospital is obtained. In way that required information data collection forms that have already been developed (questionnaires) have been transferred.

The collected information in the questionnaire are included age, sex, location of falling, time of admission, medications and drugs awareness during the fall, length of hospitalization, use of assistive devices and safety, physical injuries and the prognosis for patients. Physical injuries are including damage to the head, body and limbs. These injuries are including bone injuries (fractures), and soft tissue injury. Collected data after the entering into the computer was analyzed by SPSS software.

### RESULTS

This study investigated the incidence of injuries resulting from flat falls on patients admitted to the emergency department of Hafte Tir Martyrs hospital in Tehran in 2012. Numbers of patients have been admitted to the emergency department of the martyrs of Hafte Tir in Tehran in 2012 was 40,714 people. Those 16,590 people (equivalent to 40/7%) patients had a traffic accident

And 1,131 people (equivalent to 2/8%) patients had a fall accidents the 421 persons (equivalent to 1/03%) have fallen flat. So the people who have fallen, 710 people (equivalent to 8/62%) fall into not level place 421 people (equivalent to 37/2%) had a flat fall. Among those who have fallen flat, 255 people (equivalent to 60/6%) men and 166 (equivalent to 39/4%) were women. It

should be noted that in the fall they have a higher percentage of women than not flat fall. Mean age 93/47 years with a median of 49 years and SD is 27/7 respectively. The mean age of women was 58/95 with a median of 63 and Men, mean age was 75/40 years with a median of 34 years.

Also, the most frequent age was 65 years. Also, 232 people (equivalent to 55/1%) had a fall at home. 125 (equivalent to 29/7%) had a fall in the workplace and 47 people (equivalent to 11/2%) had a fall in public places and 17 people have fallen while getting off the car. The

most frequent reception of the season was winter and fall and in order it was 32/6% and 30/5.

5/9% of those who were died had fallen flat, percent of people who died in flat fall is more than people who were died in not level surface. Also, children under 15 years were living. Aged 15 to 30 years, 7/4% of people have died, Aged 30 to 45 years, is 3/7%, at ages 45 to 65 is 7/6 % and people aged 65 years old and more, 9% of people have died. It can be seen that with increasing age also increased the percentage of dead. Further details are provided in Table 1:

**Table 1: Table of variables such underlying patient falls flat**

Frequency percentage	Frequency	variable	
39/4	166	female	gender
60/6	255	male	
29/7	125	At work	Falling place
55/1	232	At home	
11/2	47	Public places	
4	17	While getting off the car	
8/6	36	1-15 years old	age
19/9	84	15-30 years old	
19/2	81	30-45years old	
20/2	85	45-65 years old	
32/1	135	65 years old and more	
20/6	89	spring	Admission season
16/4	71	summer	
30/5	132	fall	
32/6	141	winter	
94/1	396	alive	Patients with
5/9	25	Died	
100	421	Total Number of people	

In Continue, physical injuries have been investigated of who had fallen. First, the overall frequency of head trauma, spine, body and limbs separately osseous injuries (fractures), and soft tissue injury are presented. Then in each of its minor damage and injury has been determined. In Table 2 the frequency of head injuries, spine, body and limbs separated bone injuries (fractures), and soft tissue injury is presented. As is known, 74 (equivalent to 6/17%), head injury, 8

(equivalent to 9/1%) had spine injuries, 20 (equivalent to 8/4%) suffered body and 334 (equivalent to 3/79 %) have been affected limbs. So, the most of the damage was to the limbs and then the head. From the total of head injuries, 93% were associated with soft tissue damage, Spine injuries, were entirely bone injuries and only 50% of all injuries are soft tissue injuries and 96% of all injuries are related to musculoskeletal (bone) injuries, the most common fractures are the radius and femur.

**Table 2: Table of frequency in patients affected by the type of injury flat falls**

Frequency percentage	frequency	Physical injuries	
5/2	22	osteoid	Head injury
16/4	69	Soft tissue	
17/6	74	total	
1/9	8	osteoid	Spine injury
0	0	Soft tissue	
1/9	8	total	
2/4	10	osteoid	Body injury
2/4	10	Soft tissue	
4/8	20	total	
76/2	321	osteoid	Limb injuries
7/1	30	Soft tissue	
79/3	334	Total	
100	421	Total number of people	

In Table 3 the frequency of the head injury is divided based on injury location and its tissue damage (bone - soft) are presented. As it is shown the most damage has been done to the soft tissue that the greatest damage to soft tissues as following:

40% had Facial injuries, 31/1% had Brain lesions, and 21/6% had Subarachnoid Hemorrhage (SAH)

and 17/6% had Subdural Hemorrhage (SDH) and 14/9% had Epidural Hemorrhage. The bone damage, the most damage is to the skull fractures with 16/2% and facial fractures were 13/5%.

Further details are provided in the table below.

**Table 3: Table of Frequency distributions of patients head injury**

Frequency percentage	Frequency	Head injury		
6/8	5	floor	Skull bone	Osteoid trauma (fracture)
2/7	2	roof		
16/2	10	Skull		
13/5	12	Facial bone		Soft tissue trauma
4/1	3	Traumatic brain injury(TBI)		
31/1	23	Brain injury		
21/6	16	SAH	Skull Bleeding I	
17/6	11	SDH		
14/9	13	EDH		
40/5	30	Facial trauma		
100	74	Total head trauma		

Also the spine injuries have been associated with fractures that 6 patients with lumbar fractures and 2 patients had suffered a broken neck. In Table 4 the frequency resolution of injury and damage to body tissue (bone - soft) are presented. As is shown, the most damage

is done to the soft tissue of body that the greatest damage to soft tissues following: 25% of people with lung injury (hemopneumothorax) and 10% have been damaged spleen and body fractures are rare and most affected area in the body of this fall was a broken collarbone.

**Table 4: Table of Frequency distributions of body damage**

Frequency percentage	frequency	Body injury	
0	0	Rib fractures	
0	0	Sternal fracture	
50	10	Clavicle Fracture	
0	0	Scapular fractures	
0	0	Hemothorax	Lung
0	0	Pneumothorax	
25	5	hemopneumothorax	
0	0	liver	
10	2	Spleen	
0	0	Kidney and Bladder	
0	0	Intestine	
15	3	Body skin	
100	20	Total body injury	

In Table 5 Breakdown of injury and tissue damage to organs (bone - soft) are presented. As is shown, the most common injuries associated with fractures of the limbs in the fall are radius fractures by 39

percent and then the 6/38 percent (intertrocanter), respectively. Further details are provided in the table below.

**Table 5: Table of organ damage frequency**

Frequency percentage	frequency	Organ damage	
7/8	26	Arm Fracture	
1/2	4	Humerus	
39	130	Radius	Forearm Fractures
16/5	55	Ulena	
0/6	2	Palms	Hand fractures
0/6	2	Wrist	
2/1	7	fingers	
1/5	5	pubis	
0/6	2	acetabulum	
38/6	129	Thigh	Thigh fractures
5/1	17	tibia	Tibial fractures
3/3	11	Fibula	
0	0	Metatarsus	Leg fractures
1/5	5	Patella Knee	
0	0	Talus	Fracture of heel
0/9	3	Calcaneus	
0/6	2	Shoulder Dislocation	
0/9	3	Hip dislocation	
2/7	9	Thigh dislocation	
0/6	2	Knee injury	
4/2	14	Skin injury	
100	334	Total organ damage	

In Table 6 the type of injury in death people and living people with Chi -square has been compared,

According to the chart below we can see that the people who died, 48% of head injury, 0% spinal cord injury, 12%

body injury and 40% organs have been damaged. Also, using the Chi-square test results that there was a significant relationship between head and organ injuries with patient death. As, dead than alive, have suffered more from head injury.(16/2% vs.4/1%)

So head injury leading to death has been one of the most dangerous items. Also, more people died than in survivors have been damaged body.(15% vs.6%)

But organ damage in patients who died compared with survivors have been suffer less damage, 3/0% have been died and 18/5% of living people have been damaged the organs.

**Table 6: Comparison of damage in living and dead people**

P-value	Living people	Dead people	Injuries	
<0/0001	(:95/9) 304	(:4/1) 13	Didn't have	Head injury
	(:83/8)62	(:16/2) 12	had	
0/451	(:93/4) 352	(:6/6) 25	Didn't have	Spine injuries
	(:100) 8	0	had	
0/113	(:94/0) 343	(:6/0) 22	Didn't have	Body injuries
	(:85/0)17	(:15/0) 3	had	
<0/0001	(:81/5) 66	(:18/5) 15	Didn't have	Organs injuries
	(:97/0)324	(:3/0) 10	had	

**DISCUSSION**

In this study, the incidence of injuries has been resulting from flat falls on patients admitted to the emergency department of Haft-e Tir hospital in Tehran's, 1391

Number of patients admitted to hospital due to flat fall during one year is 421 persons and the results are as follows:

Among those who have fallen flat, men's flat fall were 5/1 women. As the average age of women are more than men. Overall, the most frequent age was 65 years.

In all age groups except 65years old and more men percentage is always higher than over women but the percentage of women at age of 65 and more who fall are more than men. The results are similar to previous reports. The findings of other studies confirm that Risk of falling for older women is more than men, which may be partly related to a higher incidence of osteoporosis in women.(31) It also stated that generally fall to one-third of people over 70 years old every year and the numbers are higher in women(7). However, in study of Dickens and et. al. stated that men have been falling from a height more than women(32) Also, Bred and et.al .have studied 51 cases and 27 of patients were male and 24 were female. (33)

According to UNICEF, in 2004 Falling in boys is more than girls, which is similar to the results of a study conducted by us in this age group.(34) Review of 92 cases in India 62 patients were men (67/39%), 30

patients (32/61%) were women aged above 60 years.(36)

Yannis Survey of elderly men and women is alike However, the fall was higher in older women.(37) In this study, the mean age was 93/47 years old. The mean age of women was 58/95 and men mean age was 40/75 years.

In the result of Maryam Akbari, Majid Abu Torabi is observed that the fall in the average age of men was 26 years and for women 37 years.(20) Falls from height age ratio of men to women in Australia has been less several years( men 28/8 to women 39/6). (38) Based on a study age falls in men is less than women in the America and average age was 68/9 years old. (33)

Overall, the results suggest acceptance of a negative effect of aging on the equilibrium level. As age increases risk of complications in the elderly population increases (3-1) but in Australia, the highest falls is in the home, ages 15-24 and is the lowest in those aged over 65 years. (38) The difference in results is due to the lack of appropriate care. In the present study, similar results were obtained. In this study, more than half of those who had fallen on the house, which was similar to the results of Majid Akbari and M. Abu Torabi, so they have mentioned was the largest number in home.(20) India had the largest number of falling at home is (97/82%).(36)

And Turkey had the largest fall from the roof of the houses. In this study, about 30 percent of at the work and 11 percent have fallen in public places.

According to Dioosh, fractures have been happened as the result of falling, especially in older

homes. (39) In Bert and et.al, study 43(84%) of the cases under the study had a fall in their home.(33) According to the study, of Yannis falling flat in older age in the America is higher and Poor environmental conditions increases the fall rate.(40) The results of this study are similar. It is stated that who had flat fall their average age is more than who didn't fall flat which is similar to results of Ali Rafiee. As noted, fall from height has been more in children and people who are working in this age.(18) Results obtained during the 8 years of study in Australia(From July 2003 to January 2011) It was that 70% Among those who have fallen flat were at the age of 45 years old and more.(38)

Therefore, the risk of falling flat in older people is much greater. It is necessary the authorities reduce and prevent and take measures and programming. As regards the fall of mortality for the age group 65 years and above is high and usually people who are alive also are with irreversible disabilities. Yannis in his review on the falling stated that 30% up to 50% fall in the elderly is related to environmental conditions such as low light (37) The importance of prevention in this age group is important. On the time and admission season the most frequency of admission is related to fall and winter and least fall is related to summer. This is natural because in cold seasons of year due to snow and rain Slipping and falling is more likely in people. A study has been done on the relation between months of the year in connection with the falling rate by Iser. Most of the falling were on the August and the least of falling were in February.(35)

About the prior awareness of the patient, most of the people in this study were survived (around 93%) which is alike the repots. In the USA, in 2001 it is reported that 10% of falls resulted in death.(26) and in 2007 it is reported that 13% of falls resulted in death.(6) in this study, the P-value for the test of the relationship between gender and the patient died 0/791 is obtained Which showed there is no difference between men and women who were died due to falling. There have been similar results with Alireza Ghodsi research project in 2003. The report has been made no effect on mortality in the elderly people.(19) also in Iser study there was not significant relationship between gender and mortality. Iser and et.al. have studied the 63/7% of men and 36/3% women who were referred due to falling . From group, 94/6% were survived and 5/4% of patients have died. Among those who were died 69/40% were men 30/60% were women. In Iser study the lowest rates of mortality

was at ages 7-15,4-6 years. Also 19/20% of death was due to falling over the age of 55 years old. (35) Similar results were obtained by us, the mortality rate was very low. It should be noted that, in this study, all individuals under age 15 are alive. But as age is increased the percentage of dead is increased. The reports also mentioned that the United States, falling mortality children is lower than adults.(5) It is clear that the deaths of children is less than adults in the same fall of height is due to less body fat, more fat skin, cartilage and skeletal structure and save it to heart and lung.(5) According to the Committee of injury of America, each year, 140 deaths due to falls in children who are under 15 years is happened to be much less than adults.(33)

In this study, approximately 18% of patients with head injury, about 2% of patients with spinal cord injury, about 5 percent had body damage and about 79% have been affected limbs. So, most of the damage was to the limbs and then the head. The result of the CCM in Europe in 2005 with respect the first body part that is in contact with the surface was achieved. Most of the injuries were in the limbs (57%) and then head (44%) and the least rate was Abdominal and body (6%).(42)

In study of Dioosh and et.al. ,In Turkey 126 fractures in 101 patients were observed 55 cases of upper limb and Upper part, 50 cases in lower limb and lower part, 14 cases of spinal, 7 cases, in pelvic have been reported.

The injury Only 17 cases of head, 9 chest and abdominal injuries, were 6 cases. According to the study, more damage in the limbs.(39)

In 2010 in Australia, 46% of falls resulting in tendon organs damage and 25% is leading to fracture and 9% has created scratching. Also 46% injuries resulting from falling were involving knee and ankle injury.(38) The overall limb injuries are more common in other parts of the body.

The head injury divided by injury and tissue (bone - soft) was observed that Head injury is the most common soft tissue that the greatest damage was to soft tissues as following: Facial injury, Brain lesion, Subarachnoid Hemorrhage (SAH) and Subdural haemorrhage (SDH) Extradural Haemorrhag(EDH). The bone damage, the most damage was to the skull fracture and has been facial bone fractures which is similar to previous reports as noted by Graham Cooper, The most



common injuries to the head is related to brain injury and skull fracture.(15) in the study of Bert, damage were more to the parietal temporal bone fractures which in this study 43% SDH of falling have been reported. All injuries were fractures of the spine which are associated with the lumbar and neck fractures.

The most body damage was related to soft tissue. With this respect, the most of soft tissue damage is as follow: lung injury (hemopneumothorax) and spleen injury and the body skin damage. Also the flat shaft fractures are rare.

And most vulnerable body is Fall-related fractures of the clavicle. In this study it was observed that the majority of organ damage was associated with bone injuries. As

The most common injuries suffered in a flat fall is related to the radius bone fracture and hip fracture (intertrochanteric) subsequently. In a study in Australia the greatest amount of damage in the organs of the men fall is related to radius and ulna, the lower end of radius has the most damage. Lower extremity injuries in the knee and thigh were more. In total, 47% lower and upper organ injuries were reported.(38) Among the soft tissue damage, the most damage was related to skin damage and dislocation of the hip.

Other reports have mentioned that most injuries are associated with pelvic fractures, femoral fractures, fractures of the lumbar spine, thoracic and humeral fractures.(15) It also stated that hip fracture increases with age.(8) The study also found that hip fracture and dislocation of Pubis is increases with age. But in the different age group difference in hip fractures hasn't been observed. Investigating the type of injury in dead and living people using the Chi – squared, it was concluded that there is a significant relationship between head injury and limb with the patient death. As more people have been died than in survivors of head injury, so head injury is one of the most hazardous items are leading to death. Also died people compare to living people, had more body injuries. But the damage to the organs of dead people than living people was less damaged.

In a similar study in recent years, 13 thousand deaths were at all ages in America caused the crash, which occurred about 126 of them were children under 14 years old or younger. Recent studies in America, Serious injuries due to falls in children, especially the second

floor (6/7 meters) when they hit a hard surface is more common. The lowest rate of death in hitting the body to the surface was due to falling.(33)

In Australia, The highest rate of fatal falls in 2007 was 40, resulted by head injury and the lowest it's been about 15 cases caused damage to other parts of the body.(38) In a survey conducted in Turkey in 11 of 101 cases (10/8%) of fatal injury was the head injury (39).

## CONCLUSION

Environmental factors such as; carpeted slippery, slippery surface of ice, unstable furniture, no knobs, are increasing linearly falling and indicates that Care of the elderly period underlying factors in the rate of fall are very effective. Changing environment, Rehabilitation, Modification of psychological problems and Modifying drugs, performing the necessary surgery is decreasing falling statics. Applying assistive device in the prevention of falls is effective.

Using Reed, belts, Safety harness when working, Use the hand rail on the staircase and bathroom, gait stabilizer walkers, hip pad, hip protector, improving and modify the floor surface smoothness and friction fit of the streets and houses, improved brightness and good light, good shoes, Reduction steps and modifying them colored edges, stepping up to show their height, Modified bathtub and shower, removable shower, Put a rubber anti-slip mat in the bath, making the sitting platform in the bath, The use of proper glasses, vision correction, appropriate shielding the windows, terraces, balconies and roofs of houses, Lift Systems for elderly, children and patients in hospitals, Adjusted to avoid administering medication and sedative and hypnotic in the elderly and those with enough awareness about their effects, Secure standard sport equipment and centers, Notification and awareness of those who care of child and Elderly and patients can all be effective in order to reduce the heavy and prolonged damages caused by falling.(14-12,8)

Finally it should be mentioned that due to the promotion of health, economy each year the elderly population is growing.(42) Thus, given the rapid increase in the elderly population and life expectancy, is required more attention and planning to increase the level of autonomy in the lives of people over age 60. Because this reduction leads to a decrease in the ability of the individual's level of independence in performing activities of daily living And thereby increases the risk of falls and

complications of falls and so it must be gained in order to take measures to prevent it.

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