

Survey of Knowledge about Fracture Prevention Among Patients and their Relatives at Department of Orthopaedic Trauma An Binh Hospital

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SUMMARY

Overview: Bone fractures are increasingly common, leaving many impacts on patients' lives and burdening relatives and families in caring for patients with bone fractures.

Research Objective: Survey knowledge about bone fracture prevention of patients and relatives at the Orthopaedic Trauma Department, An Binh Hospital, Ho Chi Minh City.

Research Methods: Descriptive cross-sectional study from August 2022 to August 2023 on 129 patients and relatives participating in answering a set of survey questions via google forms. Data were analyzed using SPSS software version 22.0.

Results: 93% of study participants had knowledge about osteoporosis risk and osteoporosis prevention. 99.2% of subjects recognized the need to check the level of osteoporosis. 93.8% planned to design crossbars with handrails in the bathroom or toilet to prevent the risk of falling and 18.6% of subjects planned or had gone for examination and treatment with oriental medicine before hospitalize.

Keywords: Bone Fractures; Osteoporosis; Knowledge; Prevention; Patients; Relatives

Introduction

Fracture is a condition in which bones are broken due to external forces from domestic accidents, traffic accidents, etc. Fractures are divided into closed fractures (the outer part of the skin where the fracture is not damaged), open fractures (the outer skin damaged by the fracture head) most often occur in the hands and feet; Sub-sidence fractures (two bones colliding causing the broken bone to be shortened) usually occur in the spine. Signs of fracture are swelling,

pain, bruising, deformity, loss of function of the injured area, protruding bones... In addition, osteoporosis is now a disease that can cause fractures due to weakened bone force and impaired bone structure, leading to a condition where the bones become brittle, easily broken when colliding with an opposing force, such as a fall for example [1]. Important bones that are often fractured are the vertebrae, hip, femoral neck and arm bones. Fractures of the ribs and pelvis are also common in older patients, and can also be considered a consequence of osteoporosis. In many cases, the bone is broken but has no super-

ficial manifestations, and the sufferer is unaware of it. Therefore, osteoporosis is also known as a “silent disease”. Partly because of this “silent” property, osteoporosis is therefore a very common disease in the community, especially among the elderly. In Vietnam, statistics show that about 20% of women over 60 years old have symptoms of osteoporosis [2]. One of the leading causes of fractures is too low bone density in people [3].

According to epidemiological studies among Caucasians, 1 in 2 women who live to the age of 85 will have a fracture, and 1 in 3 men living in the same age group will have a fracture. These frequencies are equivalent to the frequency of carrying heart disease and cancer. Indeed, the risk of femur fracture in women is comparable to the risk of breast cancer. A fracture, which can occur in any location, is also a warning sign for a subsequent fracture with a relative risk (RR) ranging from 1.4 to 4.9 depending on the fracture site (hip fracture increases the risk of a second fracture by 2.8 times in women and 4.9 times in men) [4]. The serious consequence of a fracture is a decrease in life expectancy, the risk of death is higher in men (1.8 times) than in women (1.4 times). Research by Syroid, et al. [5] shows that up to 24% of women and 38% of men die in the first 3 months after hip fractures; the rest often have chronic pain, reduced quality of life, and depend on the care of others. At the community level, fractures are a significant socio-medical burden, as the disease is very common and has a high cost. An Binh Hospital, Ho Chi Minh City with more than 500 patient beds, bed occupancy rate is more than 90%, on average receiving more than 3000 outpatients per day. The orthopedic department at the hospital with 37 beds, receives about 60 patients per day for examination and treatment. In particular, the number of hospitalizations for bone fractures has been increasing in recent years. Therefore, the research objective of this project is to assess the knowledge of relatives and patients on fracture risk prevention at the Department of Orthopaedic Trauma, An Binh Hospital in 2022.

Research Methodology

Study Design

Cross-sectional descriptive study.

Time and Location

The data collection period is from 06/2022 to 08/2022 at the Department of Orthopaedic Trauma, An Binh Hospital.

Sample Size

For $Z_{1-\alpha/2}$: Confidence coefficient, corresponding to 95% confidence, the confidence coefficient is 1.96 $p = 0.5$ (For the largest sample size, $p = 0.5$ should be selected); d : The allowable deviation between the ratio of the studied sample and the rate of implementation ($d = 0.1$). Using the above sample size formula, the basic sample required for the study is $n = 97$, plus the error and rounded to 129.

Study Subjects

Sample Selection Criteria: All relatives and patients are treated for fractures at the Department of Orthopaedic Trauma and agree to participate in the study.

Exclusion Criteria: relatives who are dumb, deaf, unable to give interviews, relatives who are not direct caregivers.

Data Collection Method

The data collection group has 4 nurses will be divided into 2 groups to provide a list of patients being treated at the department and directly interview relatives and patients with a set of prepared questions designed on Google Forms within 10 minutes.

Data Analysis and Processing

SPSS software version 22.0 is used for data entry, analysis and data processing. Frequency, ratio, average values are used to represent variables.

Medical Ethics

The topic is approved by the Review Council according to Decision No. 658/QD-BVAB, dated 07/09/2022 of An Binh Hospital.

Results

The results showed that the majority of patients and relatives in the study were between the ages of 19 and 79 years old, of which 59.7% of the study participants were over the age of 35 years (Table 1). In terms of gender, participants in the study were quite even in the proportion of men and women, of which women accounted for 56.6% and men accounted for 43.4%. Over 80% of study participants were Kinh ethnic group (80.6%) and lived in urban areas (84.5%). The majority of study participants had occupations in the manual labor group with 72.1%. Regarding the causes of fractures, study participants answered that the causes of fractures were mainly traffic accidents (38.8%), domestic accidents (37.2%) and occupational accidents (24%) (Table 2). Regarding the time from fracture to surgery, nearly half of the study participants were operated within 6 hours of the fracture (49.6%), nearly a quarter of the study participants had surgery from 6-24 hours (24.8%) and over a quarter of the study participants were operated within 24 hours of the fracture (25.6%). Regarding the history of osteoporosis treatment, only 17.1% of patients and relatives responded that they had ever received drugs including drugs such as Aclasta, Fosamax, Protelos, and traditional drugs. Regarding the history of falls, 93.6% of study participants had fallen at least 1 time, of which 15.5% of study participants had fallen 2 or more times. Regarding the family history of someone prone to fractures, 50.4% of relatives and patients responded that there was a family history of someone prone to bone fractures. The results showed that 11.6% of the study participants smoked from 2 to 15 cigarettes / day, 13.2% of people reported drinking alcohol from 0.3 to 1 liter / day.

Table 1: Socio-demographic characteristics of the participants (N=129).

Characteristics	Frequency (n)	Rate (%)
Age (45.29±1.5 years), range (19-79 years)		
19- 23 years old	18	14,0
24 - 29 years old	14	10,9
30- 35 years old	20	15,5
>35 years old	77	59,7
Gender		
Male	53	43,4
Female	73	56,6
Ethnicity		
Kinh	104	80,6
Other	25	19,4
Residence		
Urban	109	84,5
Rural	20	15,5
Job		
Mental labor	36	27,9
Manual Labor	93	72,1

Table 2: Cause of fracture and history of drug treatment, history of fracture of relatives and patients (N=129).

Characteristics	Frequency	Rate (%)
Causes of fracture		
Traffic accidents	50	38,8
Occupational accidents	31	24,0
Living accidents	48	37,2
Time from fracture to surgery		
< 6h	64	49,6
6 - 24h	32	24,8
>24h	33	25,6
History of treatment of osteoporosis with medication		
No	107	82,9
Yes (Aclasta, Fosamax, Protenos, traditional medicine)	22	17,1
History of falls		
No	8	6,2
1 time	101	78,3
2 times	11	8,5
>= 3 times	9	7,0
Family history of someone who is prone to fractures		
No	64	49,6
Yes	65	50,4

In addition, 19.4% of relatives and patients said they had used corticosteroid medications. In terms of current fitness status, only 2.7% of study participants practiced physical exercise and the sports listed such as walking, football, volleyball, basketball, badminton and dance. The results showed that most of the study participants had a high rate of correct knowledge, including 93% of the study participants with knowledge of osteoporosis prevention, so they walked briskly every 10 minutes, 3 times a day (Table 3). 93.8% of study participants had the correct knowledge that smoking had a higher risk of osteoporosis and fractures, and that underweight people had lower total bone mass, so a small extra weight loss was enough to increase the risk of fractures. 97.7% of the study participants had the correct knowledge that women were 4 times more likely than men to have their estrogen levels drop after menopause, and the same rate said that older people need to actively check for potential hazards such as obstacles, etc carpets or slippery floors. The majority of participants recognized the need to check for osteoporosis level (99.2%). However, only 93.8% plan to design crossbars with handrails in bathrooms or toilets to prevent falls. The results also showed that 18.6% of patients and their relatives had planned or had undergone examination and treatment with Chinese, oriental and traditional medicines prior to admission (Table 4).

Table 3: Study participants' smoking, drinking, corticosteroid use, and exercise status (=129).

Characteristics	Frequency (n)	Rate (%)
Smoking		
No	114	88,4
Yes (2-15 cigarettes per day)	15	11,6
Drinking		
No	112	86,8
Yes (0,3-1 liter/ day)	17	13,2
Have ever used corticosteroids		
No	104	80,6
Yes	25	19,4
Have ever been diagnosed with rheumatoid arthritis		
No	99	76,7
Yes	30	23,3
Current practicing sports		
No	101	78,3
Yes (walking, football, volleyball, basketball, badminton, dance)	28	2,7

Table 4: Knowledge of osteoporosis prevention of relatives and patients (N=129).

Knowledge	Frequency (n)	Rate (%)
Osteoporosis prevention should be brisk walking for 10 minutes, 3 times / 1 day		
No	9	7,0
Yes	120	93,0
Smoking carries a high risk of osteoporosis and fractures		
No	8	6,2
Yes	121	93,8
People who are underweight have lower total bone mass, so a little extra weight loss is enough to increase the risk of fracture		
False	8	6,2
True	121	93,8
Women are 4 times more likely than men to have osteoporosis because their estrogen levels drop after menopause		
False	3	2,3
True	126	97,7
The need to check the degree of osteoporosis		
False	1	0,8
True	128	99,2
For older people, it is necessary to actively check for potential hazards such as obstacles, carpets or slippery floors		
False	3	2,3
True	126	97,7
It is planned to design crossbars with handrails in bathrooms or toilets to prevent the risk of falls		
No	8	6,2
Yes	121	93,8
Planning or having visited chinese medicine, oriental medicine, and traditional medicine ...before admission		
No	105	81,4
Yes	24	18,6

Discussion

We conducted research on 129 patients and relatives of patients with bone fractures, of which 53 patients and relatives of patients were male, accounting for 43.4%, 73 patients and relatives of patients were female, accounting for 56.6%. The gender distribution of patients and relatives of patients with broken bones is more common in women than in men. This result is in contrast to the research of the group of authors Tran Trung Dung and Do Van Minh from Hanoi Medical University on 66 patients with two forearm fractures undergoing bone and screw fusion surgery, showing that the proportion of males, females is 71.4%, 28.6% [6].

Besides, working age and participation in traffic activities are also factors that increase bone fractures. The age group from > 35 years old accounts for 59.7% while the age group from 19 - 23 years old accounts for 14%. This result is similar to the study of Hanoi Medical University in 2014 with the average age of patients being 34.73±13.54 [6]. The result is also consistent with the study of Nguyen Lam Minh Tam and colleagues (2022), the age group with the highest proportion is from 31 to 45 years old with 17 cases (accounting for 40.47%) [7]. This is the age group that participates more in labor and is more active than other ages, so this happens more accidents; The occupations of patients and their relatives are also different, with nearly three-quarters of the study subjects being manual laborers and working conditions being different. Research results show that fractures due to traffic accidents account for 38.8%, higher than the causes of work accidents (24.0%) and daily life accidents (37.2%). This result is equivalent to the study of Hanoi Medical University with the main cause of traffic accidents [6]. Our research results are lower than the main cause of traffic accidents accounting for 71.4% by Nguyen Lam Minh Tam [7]. This shows that awareness of traffic participation and the traffic order and safety situation in our country are still weak.

In addition, the cultural level is still low, the understanding of traffic laws is also low. Furthermore, safety at work is not considered important. From there, it is consistent with the injury model in our country when the dense traffic of two-wheeled vehicles makes the group of patients whose injury cause is traffic accidents account for a high rate [7]. Our research shows that the time from injury to surgery is less than 6 hours accounting for 49.6%, from 6 to 24 hours accounting for 24.8%, over 24 hours accounting for 25.6%. From there, it was found that the time of less than 6 hours accounts for the highest rate because of early assessment and intervention, reducing the risk of complications in bone fractures. This is consistent with the research of Pham Ngoc Thang and colleagues; orthopedic traumatologists consider bone surgery from the beginning to be a reasonable choice in cases of bone body arm fractures. The reason for early surgery is to expose the nerves for examination, which is necessary to assess the damage and treat appropriately [8]. From the above analysis results, the main cause of bone fracture is a previous fall, accounting for a high rate of 78.3%, and no previous fall accounting for a very low rate of 6.2%. A history of falls increases the fear of falling, and people who are afraid of falling tend to shy away from physical activity, a reduction in movement that increases their risk of falling. Therefore, it is necessary to strengthen health education and communication on fall prevention for patients and their relatives; raising awareness about increasing activity for the elderly needs to be considered when implementing fall prevention programs [9].

The majority of people with broken bones often do not exercise, accounting for 78.3%, while in cases of walking, playing football, basketball, etc., the fracture rate is very low, 2.7%. The golden rule of preventing and treating osteoporosis and fractures early is that in addition to a complete diet rich in calcium and minerals necessary for bones, maintaining a healthy, active lifestyle, harmoniously com-

binning physical activity from young age to old age, avoid bad habits that affect bone health such as drinking too much alcohol, smoking, excessive dieting, lack of exercise,...[10]. Most believe that the reason women are 4 times more likely to have osteoporosis than men is because their estrogen levels decrease after menopause, accounting for 97.7%, and that older people need to proactively check these potential hazards such as obstacles, carpets or slippery floors also account for the same proportion (97.7%). This result suggests that we should learn and detect the potential risks of fall-related risk factors in the home itself to improve safety in the daily lives of the elderly and help reduce falls in house [9].

Conclusion

The rate of correct knowledge about preventing bone fractures is quite high: 93% of study participants had knowledge about preventing osteoporosis and should walk briskly 10 minutes/time, 3 times/day; 93.8% had correct knowledge that smoking has a high risk of osteoporosis and bone fractures, and that people who are underweight have an increased risk of bone fractures; 97.7% of study participants had correct knowledge that women are four times more at risk than men because their estrogen levels decline after menopause, and 97.7% believed that for those older adults need to proactively check for potential hazards such as obstacles, carpets or slippery floors. The majority of participants recognized the need to check the level of osteoporosis (99.2%). However, only 93.8% planned to design horizontal bars with handrails in the bathroom or toilet to prevent the risk of falls and 18.6% of patients and relatives planned or had gone for examination and treatment with chinese medicine, oriental medicine and traditional medicine before admission to the hospital.

Sponsorship Statement

The Scientific Council approved the research with project code: CS/BVAB/22/04, An Binh Hospital, Ho Chi Minh City.

Conflict of Interest Declaration

The authors declare no conflicts of interest with respect to the research, authorship, and/or publication of the article.

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