



CHAPTER I

INTRODUCTION

Little is known about the bone mass in patients with hip fracture due to falling in Thailand. Many researches suggest that the bone loss begins in the fourth or fifth decade of life and the risk of fractures related osteoporosis sharply increases after 45 years old (1,2). Hip fracture is the most serious consequence of osteoporosis, which is usually associated with a three-week hospitalization, an excess mortality rate of 12% to 20%, a 25% chance of long-term institutionalization (3), and less than an even chance full recovery. In Hong Kong, the incidence of hip fracture increased three folds in the last twenty years to reach 10 per 1000 in men and women who are seventy years old or over (4). In 30 years, there may be 350,000 hip fractures per year in the United States, at an annual cost of between US \$31 and US \$62 billion (5).

Over 90 percent of hip fracture are the result of minimal trauma, mainly falling, but in the elderly, most falls are not associated with fractures. Are those patients with hip fracture more osteoporotic? In this study, we try to answer this question.

Osteoporotic hip fracture is attributed to multifactors. Many studies in the West suggest that age, sex, race, cigarette smoking, alcohol drinking, calcium intake, body build, physical activity are main risk factors for osteoporotic fractures. But in

Thailand, we do not have enough data to answer the risk factors. Studies based on medical records show that age-specific incidence rates for hip fracture are two or three times higher in women than in men (3), so this study focus on the female elderly people to find out possible risk factors of hip fracture.

RATIONALE OF THE STUDY

1. Few researches studied that among the patients hurt with falling, the main minimal trauma for hip fracture, whether the patients with hip fracture are more osteoporotic than those without hip fracture. Although many studies have compared both bone mineral density (BMD) between the patients with hip fracture and those without, these studies failed to select subjects from people resulted from falling, which is a critical confounding factor. Some studies showed no difference of bone mass between the patients with and without hip fracture (6), because the minimal trauma may not cause fracture when the bone mass is not under so called fracture threshold. Vice versa, the one with low bone mass may not have fracture when there is no trauma or the minimal trauma is not strong enough yet, mostly we know that they are osteoporotic only when they present to the hospital because of fracture.

2. In addition to match age, selecting the patients from the source of the same sex, same falling categories may offer the actual difference of bone mass between the elderly with and without hip fracture.

3. Information is needed in order to realize the risk factors for hip fracture in the elderly Thai people since the elderly population is growing up rapidly.

RESEARCH QUESTIONS

Primary research question:

Among female patients with accidental falling, is the bone mass at the proximal femur in the patients with hip fracture different from those without hip fracture?

Secondary research questions:

1. Are age, low BMD, cigarette smoking, alcohol drinking, low milk drinking, low body build and low physical activity risk factors for hip fracture?
2. Are age, cigarette smoking, alcohol drinking, low milk drinking, low body build, and low physical activity risk factors for low BMD?

OBJECTIVES OF THE STUDY

1. To select the same source of female patients resulted from falling, try to find out the true difference of BMD between those with hip fracture and those without hip fracture by measuring their BMD in the proximal femur.
2. To observe some factors' association with hip fracture by collecting data through questionnaire so as to identify the main risk factors for hip fracture.

3. To observe some factors' association with low BMD by collecting data through questionnaire so as to identify the main risk factors for low BMD.

CONCEPTUAL FRAMEWORK

Elderly people more or less osteoporosis, particularly in the senile female, their bone mass is less than that in men with age-specific groups. Because of osteoporosis, even falling with minimal force would cause hip fracture. But most falls are not associated with fracture. Are those patients with hip fracture more osteoporotic? To identify that, the eligible subjects were selected from the same source of falling which is a confounding factor. Furthermore, some main possible risk factors for low bone mass or hip fracture were observed, too.

EXPECTED BENEFITS OF THE STUDY

As long as the risk factors for hip fracture and for low BMD are identified, some helpful intervention to control these could be taken into consideration as a public health issue, so that the incidence of osteoporotic hip fracture could be reduced and some other health problems due to low bone mass could also be managed.