QUALITY OF LIFE FOR HIP FRACTURE PATIENTS : ASSESSMENT WITH MEDICAL OUTCOMES STUDY, 36-ITEM SHORT-FORM SURVEY (SF-36)

Mr. Anan Udombhornprabha

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คุณภาพชีวิตผู้ป่วยกระดูกสะโพกหัก ประเมินผลลัพธ์ด้านการแพทย์ด้วยแบบสอบถามคุณภาพชีวิตชนิดเอสเอฟ-36 ฉบับภาษาไทยรุ่นที่ 2

นายอนันต์ อุดมพรประภา

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต
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By	Mr. Anan Udombhornprabha
Field of Study	Health Development
Thesis Advisor	Associate Professor Jariya Boonhong

Accepted by the Faculty of Medicine, Chulalongkorn University in Partial Fulfillment of the Requirements for the Master's Degree

…… Dean of the Faculty of Medicine
(Associate Professor Sophon Napathorn, M.D.)

THESIS COMMITTEE

…….. Chairman
(Associate professor Tawechai Tejapongvorachai, M.D., M.Sc.)

……. Thesis Advisor
(Associate professor Jariya Boonhong, M.D., M.Sc.)

…….. Examiner
(Assistant professor Chulaluk Komoltri, MPH, Dr.PH)

…….. External Examiner
(Professor Santhat Sermsri, Ph.D)

อนันต์ อุดมพรประภา : คุณภาพชีวิตผู้ป่วยกระดูกสะโพกหักชาวไทย การศึกษาผลลัพธ์ด้านการแพทย์ด้วยการใช้แบบประเมินสุขภาพแบบสั้น ชนิด36-ข้อ ผู้ป่วยประเมินด้วยตนเอง (QUALITY OF LIFE FOR THAI HIP FRACTURE PATIENTS: ASSESSMENT WITH MEDICAL OUTCOMES STUDY 36-ITEM SHORT FORM HEALTH SURVEY MOS SF-36)อ. ที่ปรึกษาวิทยานิพนธ์หลัก: รศ.พญ. จริยา บุญหงษ์, 126 หน้า.

บทนำ: กระดูกสะโพกหักเป็นหนึ่งในปัญหาสำคัญที่เป็นภาระต่อสุขภาพของประเทศไทย โดยเฉพาะอย่างยิ่งผู้สูงอายุ ถ้าไม่คำนึงถึงมุมมองที่เป็นปัจจัยด้านระบาดวิทยา ด้านสถานะสุขภาพ ด้านคุณภาพชีวิตและด้านทางเลือกในการรักษากระดูกสะโพกหักพบว่าข้อมูลการศึกษาด้านคุณภาพชีวิตผู้ป่วยกระดูกสะโพกหักชาวไทยยังคงขาดแคลนอยู่

วัตถุประสงค์: เพื่อศึกษาวิเคราะห์คุณภาพชีวิตผู้ป่วยกระดูกสะโพกหักชาวไทยแบบภาคตัดขวางเชิงพรรณาและศึกษาสำรวจ อิทธิพลของปัจจัยทางสังคมศาสตร์และปัจจัยทางคลีนิกที่อาจส่งผลต่อคุณภาพชีวิตผู้ป่วยกระดูกสะโพกหัก

วิธีการวิจัย: เป็นการศึกษาผลลัพธ์ด้านการแพทย์ด้วยการใช้แบบประเมินสุขภาพแบบสั้น36-ข้อ ชนิดผู้ป่วยประเมินด้วยตนเองเป็นเครื่องมือในการศึกษา โดยการส่งแบบประเมินทางไปรษณีย์ไปยังบ้านผู้ป่วยที่ได้รับการรักษาจากโรงพยาบาลและพักฟื้นที่บ้านนานมากกว่า 6 เดือนขึ้นไป

ผลการวิจัย: ผู้ป่วยกระดูกสะโพกหัก จากโรงพยาบาลเชียงรายประชานุเคราะห์จำนวน 119 ราย อายุระหว่าง 50 -104 ปี อายุเฉลี่ย 74.7 ปี (SD11.0) เป็นชาย 68 ราย และ หญิง 51ราย พบว่าผลที่ประเมินด้วยตัวผู้ป่วยเองจำนวน 43 ราย และตัวแทนผู้ป่วยจำนวน 76 ราย ไม่มีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติ(p=0.788) การศึกษาผลลัพธ์ด้านการแพทย์ด้วยการใช้แบบประเมินสุขภาพแบบสั้น 36-ข้อ มีความเที่ยงเชื่อถือได้ มีค่า Cronbach's alpha coefficient ต่อสุขภาวะทางกาย ทางจิต และสุขภาวะโดยรวม อยู่ที่ 0.91,0.82 และ0.91 ตามลำดับ ผู้ป่วยกระดูกสะโพกหักชาวไทยมีสุขภาวะทางกายที่ต่ำมากกว่าสุขภาวะทางจิต และสุขภาวะทั้งสาม ลดลงตั้งแต่ 35-46%, 28-32% และ 32-41% เมื่อเปรียบเทียบกับอาสาสมัครปกติตามลำดับ พบว่าโรคแทรกซ้อนเป็นปัจจัยที่มีผลเสียที่มีนัยสำคัญทางสถิติต่อคุณภาพชีวิตทุกๆมิติ **สรุป**: ผู้ป่วยกระดูกสะโพกหักชาวไทยมีสุขภาวะต่ำมากทั้งทางกาย ทางจิต และสุขภาวะโดยรวม การดูแลรักษาโรคที่เกิดร่วมเป็นปัญหาที่ท้าทายการรักษา

สาขาวิชา การพัฒนาสุขภาพ ลายมือชื่อนิสิต .....

ปีการศึกษา 2554 ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก .....

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KEYWORDS : Quality of Life / Hip fracture/ Elderly / Medical Outcomes Study 36 -Item Short Form Health Survey (MOS SF-36)

Anan Udombhornprabha: Quality of Life for Hip fracture patients: Assessment with Medical Outcomes Study 36-item Short Form Health Survey (MOS-SF36). Advisor : Assoc. Prof. Jariya Boonhong , 126 pp.

Introduction: Hip fracture (HF)is one of major healthcare burdens in Thailand especially in the elderly. Regardless of epidemiologic aspects and treatment options for hip fracture, there is scarce data for quality of life for Thai hip fracture patients. **Objectives**: A descriptive, cross-sectional analysis of health-related quality of life for hip fracture patients with exploration for influences of socio-demographic and clinical characteristics. **Methodology**: The Medical Outcomes Study 36-item Short Form Health Survey (MOS SF-36) were employed by direct mailing to all hip fracture patients from Chiangraiprachanukroh Hospital after hospital discharge and rehabilitation at home over 6 months. **Results**: There were 119 patients, age 50-104 years old, mean age (SD) 74.7(11.0) both men (N=68) and women (N=51). There were no statistically significant differences for scores both by patient self-rated (N=43) and proxy-rated (N=76) (p=0.788). Medical Outcomes Study 36-items Short Form Health Survey (MOS SF-36) v. 2 is a reliable tool, with Cronbach's alpha coefficient at 0.91, 0.82 and 0.91 for Physical, Mental and Global health scores. Overall, hip fracture patients suffered deficits scores of physical, mental and global health reflecting over 35-46 %, 28-32% and 32-41% point reduction as compared with healthy people. Presence of comorbidities significantly influences quality of life in all health symptom dimensions **Conclusion**: Thai hip fracture patients reflected the lower physical, mental and global health as compared with healthy people. Management of comorbidities of hip fracture patients is challenging in healthcare management.

Field of Study : Health Development Student's Signature .....

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CHAPTER I

INTRODUCTION

1.1. Backgrounds and Rationale

Hip fracture is one of the most common problems for the elderly with surging incidence in the USA. It is estimated that most of hip fractures are due basically to falls subsequent to osteoporotic fracture (*1- 2*). In Thailand, hip fracture incidence has also dramatically increased due to an aging population. It is one of the national healthcare burdens which needs to be systematically managed by the healthcare institute as a priority. The age-adjusted hip fracture incidence is 7.45 per 100,000 populations, but in women is 14.93 per 100,000 which is higher than in men (*3-4*). Hip fracture patients experience significantly poor health-related quality of life both in terms of physical and mental functions, thereby inadvertently affecting their daily living activities. The underlining causes of hip fractures are well associated with declining physiological and anatomical changes due to aging. Hip fracture patients in the aging population suffered even more than in the general aging population. They are also frail to various co-morbidities together with a declining visual acuity and balance organ due to degenerative joint and bone diseases. These conditions may be regarded as pre-disposing risk factors for fractures as a result of falls. It could also be an added risk factor for recurrent fractures. The surging mortality after hip fractures due to poor pre-operative condition or other factors have been widely investigated elsewhere in the west but not in Thailand (*5 - 9*). Similarly, as in the west, Thai hip fracture patients could have access to more specific treatment as compared to other fractures. This is mainly due to innovative medical and surgical techniques are all available in Thailand. There is a need to specifically measure health-related quality of life for hip fracture patients in order to provide better understanding in terms of outcomes after hip fracture, unless effectiveness is proven of beneficial effects of techniques for the management of hip fractures as a whole, In Thailand, Suriyawongpaisal et al reported that the poor quality of life for hip fracture patients was an important cause of mortality and morbidity (*11*). In addition,

Chariyalertsak S et al reported a mortality rates after a hip fracture during the 3 months follow-up period after hospitalization in Thailand was as high as 9 %. And this rate was increased from 12% to 17% within 6 to 12 month of follow up respectively (*12*). Pongchaiyakul et al reported that the occurrence of hip fractures due to osteoporosis in Thailand was associated with urbanization which is consistent in many studies (*15*). There were also different patterns of fractures both in urban and rural communities.(*13-14*) As such, with the development of Thai society into an urbanized society, any preventive care availability for different patterns of hip fracture needs to be justified for both preventing the occurrence of hip fractures and for improving services of care especially in terms of health-related quality of life after fracture (*15*). After hospitalization, hip fracture patients may be discharged due to limitation in specific clinical settings either surgical or non-surgical. Woratanarat P et al analyzed different types of hip fracture comparing femoral neck fracture and intertrochanteric fracture admitted in hospital. They found that intertrochanteric fractures significantly caused more dependency due to patients' poor health-related quality of life especially during pre-operation (p=0.008) than femoral neck fracture (*16*). However, the study was unable to explain why non-surgical hip fracture patients were not different from surgical hip fracture patients in terms of health-related quality of life. The study reported even after surgery, there were only 27% of patients returned to their previous status meanwhile 24%-41% of patients remained in rehabilitation setting and had poorer physical status for both types of hip fracture after hospital discharge. Suriyawongpaisal P et al found that only the presence of co-morbidity was associated with significant difference of health-related quality of life ($p < 0.001$) whereas there was no difference whether surgical or non-surgical before or after hospital discharge ($p = 0.069$) and after follow-up for an average of 19 months (*11*). Moreover, a case control study by Jithathai J et al reported that health-related quality of life measured by SF-36 after hip fracture for the elderly living in a community was significantly ($P<0.05$) poorer as compared with non-fracture individual (*18*).

As above, there is scarce as well as inconsistent Thai data in terms of health-related quality of life for hip fracture patients which are due to following:

1. Epidemiologic aspects of hip fracture (e.g, the relative incidence of osteoporosis, falls, fractures, and repeat fractures in particular subgroups).
2. Health status and quality of life aspects of both the illness itself and the availability of different treatment options especially for the elderly people.
3. Different treatment options characterized by the likelihood of prolonging survival, producing major impairment and disability in short-term such as surgery, or improving the patient's physical functioning and mobility, promoting emotional well-being, social interaction, and independence.
4. A high degree of professional and clinical uncertainty and disagreement about alternative strategies for managing the care of hip fracture patients
5. Substantial variation across geographic areas in the per-person use of services for hip fractures, including those for prevention and management of risk factors beyond that explained by the difference in patients' characteristics or healthcare resources.
6. Substantial variation across geographic areas or institutions in terms of outcomes of care for patients with hip fractures, which may goes beyond that explained by the differences in the severity or type of fracture or the socio-demographic characteristics of patients.

Since a health-related quality of life (HRQL) instrument such as Medical Outcomes Study 36-item Short Form Health Survey (MOS SF-36 Thai) has been well validated, it is one of the most widely used tools in medical research globally including Thailand, especially for chronic diseases related to physical , mental function and general health status (*19-27*). Unfortunately, there are only two studies in terms of quality of life specifically for Thai hip fracture patients in the past 8 years (*11, 18).* As such, a cross-sectional analysis of health-related quality of life for Thai hip fracture patients could provide further understanding of hip fracture patients in terms of health-related quality of life for better professional care and services.

At Chiangraiprachanukroh Hospital, approximately 350-400 hip fracture patients are admitted each year. These hip fracture patients come from various settings, as acute traumatic incidence, as follow-up patients and as referred patients with different clinical and socio-demographic backgrounds. These hip fracture patients were well aware of hospital post-discharge follow-up services with high rate of follow-up responders. Thereby, it is an important reservoir of hip fracture patients. It is essentially beneficial to explore health-related quality of life of these hip fracture patients. Despite specific limitations and constraints, this study is the first to explore health-related quality of life of hip fracture patients from various practical clinical and socio-demographic settings. As above, there is a good rationale to assess health-related quality of life for Thai hip fracture patients by a using of Medical Outcomes Study 36-item Short Form Health Survey, Thai MOS SF-36.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

2. Review of the Related Literature

2.1 Hip fractures

Hip fracture is common in adults and often leads to devastating consequences. Disability frequently results from persistent pain and limited physical mobility. Hip fracture is associated with substantial morbidity and mortality, approximately 15-20% of patients die within 1 year of fracture. However, interestingly, Zuckerman JD et al remarked that morbidity and mortality in those older than 90 years sustaining a hip fracture were not found to be statistically higher than others in the same age group without such an injury (*29-30*).

Most hip fractures occur in elderly individuals as result of minimal trauma, such as a fall from standing height and slippery fall reflecting low-pressure fractures. In young, healthy patients, these fractures usually result from high-velocity injuries, such as motor vehicle collisions or falls from significant heights. Despite comparable fracture locations, the differences in low- and high-velocity injuries, in older versus younger patients outweigh their similarities. High-velocity injuries are more difficult to treat and are associated with more complications than minor trauma injuries. Several risk factors are associated with the risk of a hip fracture patient sustaining a second fall (*32*).

Increasing age, cognitive impairment, decreasing bone mass, visual impairment and decreasing depth perception, decreased mobility, dizziness, and a poor/fair self-perceived state of health were all linked to increasing likelihood of sustaining a second fall and thus a possible second hip fracture. Some studies have identified additional risk factors for hip fracture such as cardiovascular disease specifically heart failure as a significant risk factor for hip fracture. Other controversial dilemmas are over the risks

and benefits of the protective effect of thiazide diuretics against osteoporosis related hip fracture in elderly people and its inferiority in terms of cardiovascular protection especially among the elderly people, this needs to be reassessed (*34-35*).

Specific characteristics in men such as smoking, tall stature, stroke, and dementia were found to increase the risk of hip fracture, while non-work related physical activity and high BMI were found to be protective whereas male athlete individuals sustained hip fractures at significantly older ages than their less active counterparts (*36-37, 66-67*).

Two classes of drug have also been implicated in hip fracture such as patients taking antipsychotic and protease inhibitor therapy, which were more likely to sustain fractures than those on other agents (*38-39*).

Hip fracture has brought about subsequent deleterious physiological complications of various systems as (*29-31*):

(a) Musculoskeletal system. An ultimately deteriorated immobilization causes joint stiffness, muscular dystrophy and deleterious bone resorption and osteoporosis.

(b) Circulatory system. This occurs as consequence of immobilization. Thus lower cardiac loading and subsequent deep vein thrombosis due to thrombus and thrombophlebitis

(c) Respiratory system. This is due mainly to poor thoracic expansion and movement from immobilization on bed which further decreases lung expansion and increases the risk of pulmonary embolism, thus increasing the risk of decreasing sputum excretion and hypostatic pneumonia.

(d) The common pressure ulcer as a major risk due basically to post-operative immobilization.

Goal of Management and Care for Hip Fracture Patients

The goal of management and care are as following (*29-31*):

(1) To keep patients alive by acute medical management.

(2) To fix the fracture with various surgical challenges available depending on the site and type of fracture either by a) internal fixation b) hemi-arthroplasty c) hip compression

screw or d) total hip replacement

(3) To keep the patient mobile through a multidisciplinary approach by physiological rehabilitation

(4) To further prevent secondary or repeated fractures as well as to heal the fracture.

Pathophysiology of Hip Fracture (*29-30*).

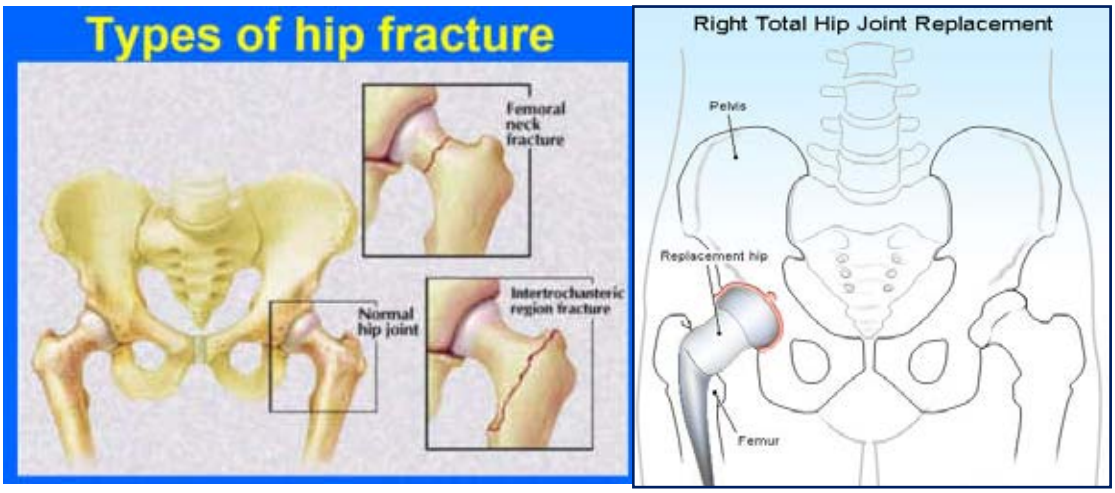
The hip joint is a large multi-axial ball-and-socket synovial joint, enclosed by a thick articular capsule. The hip joint is designed for stability and a wide range of movement. Next to the shoulder, it is the most moveable of all joints. During standing, the entire weight of the upper body is transmitted to the heads and necks of the femurs. The round head of the femur articulates with the cuplike acetabulum. The strong, loose fibrous capsule permits free movement of the hip joint, attaching proximally to the acetabulum and transverse acetabular ligament. The fibrous capsule attaches distally to the neck of the femur only anteriorly at the intertrochanteric line and root of the greater trochanter. Posteriorly, the fibrous capsule crosses to the neck proximal and to the intertrochanteric crest without attaching to it. The fibrous capsule thickens to form 3 ligaments of the hip joint: the Y-shaped iliofemoral ligament (of Bigelow), the pubofemoral ligament, and the ischiofemoral ligament. The hip joint is further supported by the femur and the muscles that cross the joint; this bone and these muscles are the largest and most powerful in the human body.

The length, angle, and narrow circumference of the femoral neck permit a substantial range of motion at the hip but also subject the femoral neck to incredible shearing forces. A fracture results when these forces exceed the strength of the bone. The intertrochanteric line is an oblique line that connects the greater and lesser trochanters, dividing the femoral neck from the shaft. Hip fractures involve fracture of any aspect of the proximal femur, from the head to the first 4-5 cm of the subtrochanteric area.

Hip fractures can be classified based on their relation to hip capsule (intracapsular and extracapsular), geographic location (head, neck, trochanteric, inter-trochanteric, and

subtrochanteric), and degree of displacement. Higher-grade displacement implies a worse prognosis. Fractures of the femoral head and neck are intracapsular, whereas those of the trochanteric, intertrochanteric, and subtrochanteric regions are extracapsular. The treatment as well as the prognosis for successful union and restoration of normal function varies considerably with fracture type. Intracapsular hip fracture, like all other intracapsular fractures, frequently have complicated healing. The thick capsule that surrounds these fractures separates them from adjacent soft tissue and capillaries, leading to impaired callous formation. Thus, nonunion and avascular necrosis (AVN) are added complications of these fractures.

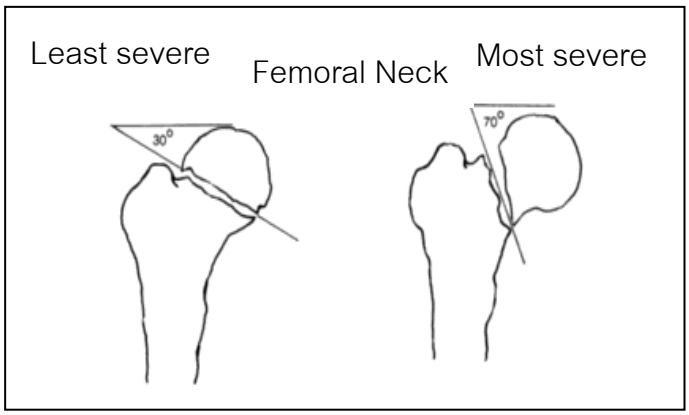
Figure 1 Patterns or types of hip fracture



There are generally three patterns or types of hip fracture as follows:

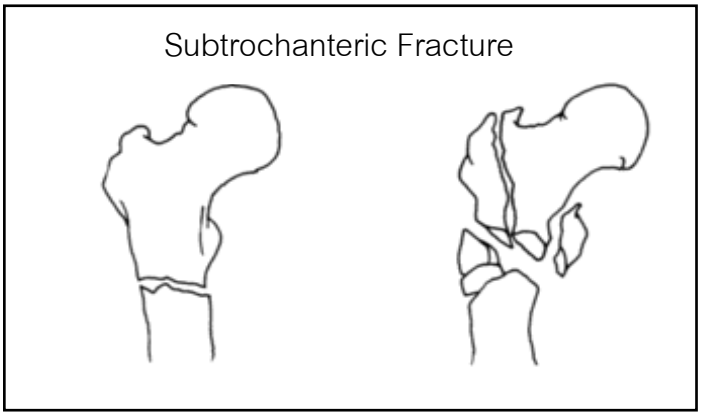
1. Femoral head fractures

Isolated femoral head fractures are rare and are usually associated with hip dislocations. Superior femoral head fractures normally are associated with anterior dislocations, while inferior femoral head fractures are associated with posterior dislocations. They are usually best appreciated on postreduction radiographs for hip dislocations. Fractures of the femoral head are more common in younger patients as results of major trauma, which is more likely to cause femoral neck fractures in older patients.



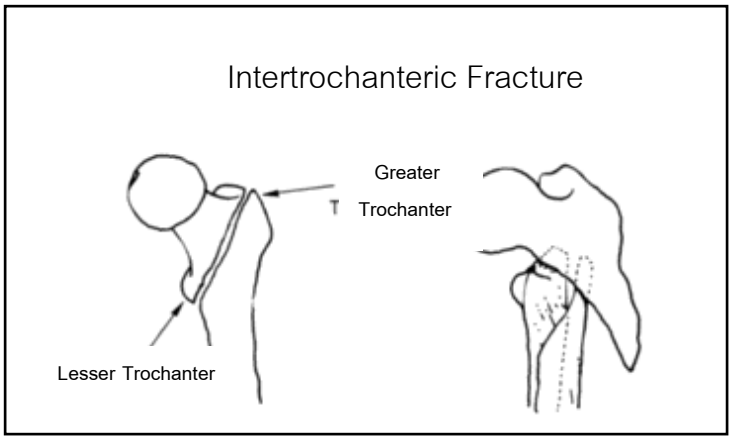
2. Trochanteric fractures

Greater trochanteric fractures usually result from avulsion injuries at the insertion of the gluteus medius. Lesser trochanteric fractures may be caused by avulsion injuries of the iliopsoas secondary to forceful contraction. These are most common in children and young athletes (eg, dancers, gymnasts)



3. Intertrochanteric fractures

These extracapsular fractures occur in a line between the greater and lesser trochanters, generally in elderly patients and women, secondary to osteoporosis.



Mortality and Morbidity (*2*, *10*, *12, 27*, *29-30*).

Overall mortality rate of hip fractures is 15-20%, yet in older persons this can increase to 36% over the year following hip fracture. Roche JJW et al (*27*) investigated from 2448 elderly hip fracture patients in a prospective observation cohort over four year period. The authors reported one year mortality of elderly hip fracture patients as high as 9.6% at one month and 33% at one year should patients had comorbidities. Rate of mortality is greatest in the first few months following injury but remains high for up to 1 year. It then returns to the same rate for age- and sex-matched people without hip fracture. Surgical delay independently affects mortality. Patient for whom surgery is delayed for 2 days or more, have a 17% higher mortality rate at 1 month. A subsequent study showed increased mortality but decreased readmission rate in those repaired more than 4 days from the time of injury. Also, general anesthesia was associated with higher morbidity than was spinal/epidural anesthesia (*40*). Chariyalertsak S et al (*12*) also reported mortality rate after hip fracture during the 3 months follow-up period after hospitalization in Thailand was 9 % whereas 6 months to one year was as high as 12% to 17% respectively.

Morbidity associated with hip fracture is staggering, especially in older persons. Morbidity from immobilization includes development of deep vein thrombosis, pulmonary embolism, pneumonia, and muscular de-conditioning. Morbidity from surgical procedures includes complications of anesthesia, postoperative infection, loss of fixation, mal-union or nonunion, as well as the complications associated with immobilization as outlined above. Surgical delay of greater than 48 hours has been shown to increase morbidity and mortality (*40*).

Hip fracture resulting from major trauma often is associated with other bone and soft-tissue injuries, intra-abdominal and intrapelvic injuries, major blood loss, head and neck injuries, and other extremity injuries. Morbidity associated with an inability to return to a prefracture level of mobility results in a loss of independence, reduction in quality of life, and depression, particularly in older persons (*29-30*).

Race and Sex (*29-30, 42*)

The incidence of hip fracture is 2-3 times greater in whites than in nonwhites, primarily because of the increased rate of osteoporosis in whites. This difference is not unique to females; African American and Asian men have been found to have significantly higher bone densities than their Caucasian and Latino counterparts. Rate of hip fracture is 2-3 times greater in women than in men. At least 75% of all hip fractures occur in women. The lifetime risk of hip fracture in white women and men is 15% and 5%, respectively. Femoral neck fractures are more common in women than in men by about 4:1, while intertrochanteric fractures are more common in women than in men by about 5:1.

Clinical History (*29-30*)

- In elderly patients, hip fracture most often results from a simple fall; in a small percentage, it occurs spontaneously, in the absence of any trauma. Patient complains of pain and inability to move the hip with stress fractures in young athletes and non-displaced fractures, patient may complain of pain in hip or knee and may be ambulatory. Patient may have a history of other osteoporotic fractures, such as Colles or vertebral compression fractures. In older persons, more than 90% of hip fracture result from trauma or torsion associated with a minor fall or, occasionally, in the absence of any obvious traumatic event.
- Osteoporosis is the leading cause of hip fracture.
- Other risk factors for hip fracture include as following:

  : Neurological impairment, Caucasian race, cigarette smoking, institutional living, maternal history of hip fracture, previous hip fracture, physical inactivity, tall stature, alcohol abuse, previous Colles or vertebral fracture attributed to osteoporosis, low body weight, impaired vision, prolonged corticosteroid use, use of medications that decrease bone mass, including furosemide, thyroid hormone, phenobarbital, and phenytoin.

Complications and Prognosis of Hip Fracture (29-30)

One or more probable complications may occur among hip fracture individual. Thereby prognosis of hip fracture varied according to pre-fracture health status and individual per person healthcare resource and service received. Moreover the prognosis and complication vary considerably depending upon patient's age, comorbidities, type or pattern of fractures. In general, young patients almost always regain the ability to ambulate, yet depending on fracture type, they may not return to their previous level of activity. Meanwhile older patients do not regain the ability to ambulate or are able to do so only with assistance. This profoundly affects their ability to live independently. Almost 20% of patients never regain the ability to ambulate, and a similar percentage are unable to ambulate outside their homes. Only 50-65% of patients regain their pre-morbid ambulatory status. The most likely complications are summarized as below:

- Infection: Mostly occur in a small percentage of patients undergoing hip fracture surgery
- Pneumonia and thromboembolism: A possible side effect of surgery leading to deep vein thrombosis and pulmonary embolism due to blood clot which may lead to serious medical condition.
- Nonunion and avascular necrosis: Due to fracture displacement, damage to vascular supply and sepsis
- Chronic pain and Gait disturbance

2.2 Quality of Life (*43, 75*)

WHO has defined quality of life as “An individual’s perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person’s physical health, psychological state, personal beliefs,

social relationships and their relationship to salient features of their environment." There are two categories of quality of life. Firstly, Health-related quality of life (HRQL), which is defined as quality of life that related to personal health status and in addition, with mental, social, spiritual statuses and also with role in activities and holistic living being. Secondly, non-health-related quality of life (NHRQL), which is quality of life defined in a broad definition. The NHRQL contained four domains such as personal-internal domain, personal-social domain, external-natural environment domain and external-societal environment domain. HRQL has been largely used in medical research. The three categories of HRQL instrument for quality of life evaluation are as follows:

(1) Generic instrument HRQL which is used to assess varying aspects in quality of life. The instrument contains physical function, mental function and the social, emotional as well as general health perception in terms of care. The most widely recognized HRQL of this type are World Health Organization Quality of Life (WHOQOL) and the Medical Outcomes Study 36-item Short-Form Health Survey (MOS SF-36), the contents of which similar to a 36-item Short-Form Health Survey (SF-36) (*45*) which have been globally translated and validated in many languages including Thai. The other examples of this type of HRQL are i.e. Well Being Index (WBI), Sickness Impact Profile (SIP) and Nottingham Health Profile etc.

(2) Specific instrument HRQL which is developed and employed mainly to assess HRQL of certain disease-specific setting such as Oxford Knee Score, Berg Balance Scale, Frenchay Activities of Daily Living Index (FAI), Clinical Dementia Rating Scale, Chronic Respiratory Questionnaire, Hemifacial Spasm Questionnaire-30(HFS-30), Arthritis Categorical Scale, Arthritis Impact Measurement Set(AIMS),Western Ontario MacMaster Osteoarthritis Index(WOMAC) etc.

(3) Instrument for measuring Utilities or Utilities measurement (*43*) which is an instrument mainly uses for comparative effectiveness research (CER). This type of scale ranges from score "0" for the worst to "1" for the best. Some of the commonly uses CER

such as the Standard Gamble, Time Trade-Off (TTO) and the Health Utilities Index (HUI), European Quality Of Life Scale or an Euro QOL(EQ-5D) etc.

2.3 The Medical Outcomes Study 36-item Short-Form Health Survey (MOS SF-36) (*45*)

The Medical Outcomes Study 36-item Short-Form Health Survey (MOS SF-36) was developed by Ware JE et al originally known as SF-36. The revision of SF-36 with purpose of better scoring in different version, SF-36 version 1 and SF-36 version 2. The contents of questionnaire for SF-36 are similar to MOS SF-36, however MOS SF-36 is unpatented and the author allows adaptation for medical research. The MOS SF-36 is a generic self-completed questionnaire widely used in clinical practices especially well validated against many specific-diseases. The MOS SF-36 contains 36 questions (items) which measures 8 health concepts (construct) and health transition (HT). The eight health concepts are physical function (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE) and mental health (MH). These eight health profiles are grouped into two major components as Physical Component Summary (PCS) and Mental Component Summary (MCS). The adapted version of MOS SF-36 for purpose of scoring are indicated as follows:

- The Physical Component Summary (PCS) comprises 5 scales i.e. PF, RP, BP, GH and VT.

- The Mental Component Summary (MCS) comprises 5 scales i.e. GH, VT, SF, RE and MH.

- The questionnaire in MOS SF-36 varies in the number of possible answers and direction. It needs to be standardized at all eight health dimensions. After standardization of the MOS SF-36, a score for each question is first recorded. A multi-item raw scale score is then computed by simply summing up all item scores in that scale. These raw scale scores are finally transformed to a 0 – 100 scale so that a higher score indicates a better state of health.

- The PCS and MCS are the average of all scale scores in that dimension. (scores 0 – 100)

- The MOS SF-36 version 2.0 was later introduced after improvement on the two roles of functional scales. In comparison with the MOS SF-36 version 1.0, the MOS SF-36 version 2.0 included simpler instructions and questionnaire items, improved layout for questions and answers and widely used translations and cultural adaptations with five level response choices in place of a dichotomous response choice for items in the two roles functioning scales but maintaining the scale scores similar to version 1.0.

- The MOS SF-36 version 2.0 improves by elimination of one of the six responses choice from Mental Health (MH) and Vitality (VT) items from MOS SF-36 version 1.0 to five responses choices.

- The MOS SF-36 provides excellent interpretation of the score with a simplified norm-based scoring of its health domain scales and component summary measures. In general, it is recommended that users base their interpretations on norm-based scores (Mean =50, SD=10) rather than from 0 - 100 scores for the purpose of comparison, unless there are normative scores on such population had been carried out.

In Thailand, the normative data for MOS SF-36 and SF-36 were conducted by Kongsakon R et al (*47*) from a survey of 1,148 randomly selected Bangkok metropolitan residences. The study sample consisted of 436 (38%) men and 712 (62%) women in age ranging from 15 - 77 years. The normative data results also provide useful information for scores from different aging groups. For the purpose of comparison with MOS SF-36 for hip fracture patients from Chiangrai Hospital, the MOS SF-36 for healthy individual 55 year olds or older reported by the same is used. Surprisingly, there is no different scores deviation among different age group (15-24 years old, 25-34 years old,35-44 years old, 55-64 years old) among Bangkok metropolitan residence. For all dimension scores of MOS SF-36 reported, they were significantly different among

different age groups only for all women (p- value <0.05). On the contrary for men, these dimension scores are significantly different only for selected health dimension of different age groups with the exception of General health (GH) (p=0.130), Vitality (VT) (p=0.487), Role emotion (RE) (p=0.088) and Mental health (MH)(p=0.618). In addition, Lim L-Y L et al (*48*) had conducted an investigation for Thai SF-36 health survey to test the data quality, scaling assumptions, reliability and validity in 744 healthy men and women nationally. The study population consisted of men and women of age from 21-78 years old (mean age 31 years), with more than 85% age >44 years whereby 61.4% of the samples are women. The test among healthy Thai both from Bangkok metropolitan and national population reflected the Cronbach's alpha reliability coefficient in different ranges such as for Physical function (0.48-0.68) , Role physical (0.65-0.77), Bodily pain (0.83), General health (0.60-0.79), Vitality (0.64-0.75), Social functioning (0.77), Role emotion (0.67-0.84) and Mental health (0.50-0.75) respectively. Beaton DE et al (*49*) concluded that SF-36 was in fact the most appropriate questionnaire to measure health changes in the population that involved musculoskeletal disorders. This confirmation also corresponded to the investigation of the health related quality of life in multiple musculoskeletal diseases test among 3664 subjects. Picavet HSJ et al (*50*) also confirmed that SF-36 was a very reliable tool for musculoskeletal disease involving physical functioning (Cronbach's alpha reliability coefficient at 0.92, 0.90, 0.86 for Physical functioning, Role physical and Bodily pain respectively. However, the response was observed with lower Cronbach's alpha reliability coefficient at 0.77 and 0.64 for Vitality and Social functioning. Moreover, Kvein TK et al (*51*) also confirmed that the SF-36 health survey is particularly suitable for disease with higher degree of disease-specific measures, as more specific especially to hip fracture in terms of physical function than rheumatoid arthritis. In addition, Bjomer JB et al (*52*) also concluded their findings after tests of data quality, scaling assumptions and reliability of SF-36 in the Danish setting, after testing with over 4080 healthy people. They confirmed that the SF-36 reflects skewness, kurtosis and ceiling effects in many subgroups but not in elderly people or people with chronic disease such as hip fractures, meaning SF-36 is a very useful tool for assessment in elderly patients with physical impairment. In Thailand,

Leurnmankul W et al (*20*) had conducted the retranslation of SF-36, the second version looking at the validity and reliability especially with the multitrait scaling analysis. There were 448 Thai healthy volunteers which was 126 men (28.8%) and 312 women (71.2%) age ranging from 21-65 years, available for testing the SF-36 version 2 retranslation version. The authors concluded that the SF-36 new version had Cronbach's alpha coefficients exceeding the level 0.7 (0.72-0.86) in all dimension with exception for large variation in Role emotion and Vitality. Interestingly, more recently some authors such as Suzukamo Y et al (*53*) whom also working in collaboration with John Ware et al (*45*) had proposed from their observation and analysis of the translation of SF-36 in Japanese. Instead of original two component summary scores for Physical Component Summary(PCS) and Mental Component Summary(MCS) which had been accepted for so many years, the authors had attempted to convert to three components as the third components called the role component summary (RCS). RCS consisted of Role physical, Social functioning, and Role emotion subscale. After testing, the authors concluded that three components are better in terms of goodness-of-fit index of 0.945, more than original two components index of 0.935. The authors proposed that the PCS could discriminate between groups stratified by co-morbid conditions, and the MCS discriminated between groups stratified by psychological depression whereas both PCS and RCS discriminated from the absence from work. However, the test was in Japanese version and setting only. Popularity of SF-36 and MOS SF-36 in Thailand medical outcomes studies had been well observed. The health-related quality of life assessment with SF-36 for Thai patients had been widely conducted in Thailand. Bunyavejchevin S et al (*54*) investigated in the overactive bladder stress and mixed urinary incontinence among Thai Postmenopausal women. Sobhonslidsuk A et al (*55*) investigated SF-36 in chronic liver disease. Lertwanich P et al (*56*) investigated in sport injuries patients and Charoencholwanich K et al (*25*) investigated among patients with total knee arthroscopy. In some neurological disorders such as Stroke, Epilepsy and Myasthenia Gravis also confirmed the consistent validity and reliability of SF-36 (*27, 57-59*). Singhphoo K et al (*57*) investigated in epileptic patients meanwhile Tiamkao S et al (*58*, *27*) in Stroke patients and Kulkantrakorn K et al(*59*) in Myasthenia Gravis. In other

diseases, Bunnag C et al (*60*) conducted the study in patients suffering from allergic rhinoconjunctivitis. By large, despite setting research priority is a key to healthcare management for reduction of burden of disease, there are only 2 studies for hip fracture patients which employed the old version of SF-12 and another first version of SF-36 for the past 8 years since 2003. Moreover, these studies were only conducted among Bangkok metropolitan residences as a community survey (*11*) and a case-control study (*18*). As such, these studies could have potentially undermined generalization of the findings. The MOS SF-36 version 2 had been validated and used by Jirarattanaphochai K et al (*19*) to investigate in musculoskeletal disorders such as low back pain patients. They assured reliability and validity for MOS SF-36 assessment in Thai patients. As such, investigator employed this version with adaptation of questionnaires outlooks, wording and re-scaling for assessment of health-related quality of life for hip fracture patients at Chiangrai Hospital.

2.4 Health-related Quality of Life for Hip Fracture Patients

Shyu et al (*61-63, 70*) conducted a randomized experimental design to assessed health-related quality of life of 162 elderly hip fracture patients with SF-36 at 1, 3, 6 and 12 months after hospital discharge. The author compared between patients receiving interdisciplinary intervention program and those whom did not receive the intervention program. The simple interdisciplinary interventions were geriatric consultation service, rehabilitation program and discharge-planning service. The authors concluded that the interdisciplinary intervention program may improve health-related quality of life outcomes of elders with hip fracture especially physical related health outcomes had more treatment effects than emotional or mental outcomes. Poulain et al (*64*) conducted a prospective multicenter study of 203 consecutive hip fracture patients who underwent hemi-arthroplasty for femoral neck and assessment of quality of life outcomes with SF-36 after one year. They found that the quality of life assessment with SF-36 for pre- and post-operative at one year was not significantly different and mortality after hip fracture was still as high as 18.2%. Paradoxically, in some cases the authors reported that 29.1%

of patients who were dependent preoperatively were totally independent only one year after surgery which indicated better quality of life after hemi-arthroplasty in long-term but these findings were inconsistent with the indifference for over all SF-36 results between pre-operation and post-operation. Rohde et al (*65*) conducted a case-control study among patients with low-energy wrist fracture (N=181) or hip fracture (N=97) and a matched-control (N=226). The assessment of health-related quality of life with SF-36 pursued within 2 weeks after fracture. The authors concluded that hip fracture patients had the lowest score and the socio-demographics (age, sex, education and marital status) and clinical fracture features (osteoporosis, falls and fracture type) are important risks factor but explaining only the 59.3% of differences between the outcomes. Laet et al (*66*) conducted a meta-analysis looking at body mass index as predictor of fracture risk. The study aimed to quantify the effect and association of BMI with fracture risk in relation to age, gender and bone mineral density (BMD). Over 60,000 patients in 12 prospective population-based cohorts with BMD adjusted Relative Risk (RR) to quantify any fracture risk and BMI. The authors concluded that when compared a low body mass index of 20 kg/m2 to 25 kg/m2, there was a nearly twofold increase in risk ratio (RR=1.95; 95% CI, 1.71-2.22) for hip fracture. The RR per unit change in BMI was not different between men and women ($p > 0.30$), however age-adjusted risk at 65 years for any type of fracture increased significantly with lower BMI. Over all, lower BMI confers substantial risk to all fractures independent of age and sex. Randell et al (*67*) found that the health-related quality of life outcomes assessment with SF-36 was reliable. In comparison with the matched-control, the SF-36 score reduction for Physical function (-51%), Vitality (-24%), Social Function (-26%) was more outstanding. The authors suggested the assessment of health-related quality of life with SF-36 to be part of comprehensive assessment of the cost for fracture-associated morbidity. Boonen et al (*68*) assessed health-related quality of life for hip fracture with SF-36 in a prospective case-control study over 1 year following hip fracture in elderly women. The authors concluded that regardless of age and comorbidity, poor functional status upon discharge was the strongest predictor of a poor functional status at 1 year and responsible for over 24% functional decline. However, responder rate for patients to complete the SF-36 was only

51%, which may have contributed to considerable bias, even though mean global SF-36 score of hip fracture was significantly lower than matched-control at 56.4(95% CI: 51.9-60.9) Vs 71.1(95% CI: 67.5-74.8) (P<0.001). As such, responder rate is also a determining factor for conclusion of the finding. Pande et al (*69*) evaluated health-related quality of life assessment with SF-36 in 100 hip fracture patients in a case-control study over 2 years. One year mortality was 45% for hip fractures whereas 1% for control, and 2 year mortality was 58% for hip fractures died but only 8 % for controls. Bronchopneumonia (36%) and heart failure (16%) and ischemic heart disease (16%) are the main cause of death. Ho et al (*71*) analyzed over 50,000 hip fracture patients who were 45 years or older admitted to acute care hospital with primary diagnosis of hip fracture excluding trauma whom discharge between 1990-1992 in major US and Canada. They looked at patients whose length of stay (LOS) in hospital was at 365 days or less and employed instrumental variables statistical analysis model looking at post-surgery LOS and inpatient mortality. They found that the wait time for surgery from statistical model was not a significant predictor of post-surgery length of stay and concluded that longer wait time for hip fracture surgery does not explain the difference in post-surgery outcomes across countries. These results were statistical models that account for censoring and confounding which yielded different conclusions from studies conducted by Doruk H et al and Moran C et al (*72-73*). They suggested that generally when the elderly were operated on within 5 days of the hip fracture they have increased survival time (p<0.05) and had better functional outcomes (P<0.05) than those operated after the fifth day of admission. A delay of surgery for more than four days in patients who are fit for surgery significantly increases mortality and hip fracture patients with medical comorbidities but a delay in surgery had 2-3 times the risk of death within 30 days after surgery compared with patients without co-morbidities delaying surgery. Silva Mendoca et al (*17*) concluded that both mental and physical health assessed with SF-36 for elderly hip fracture patients were severely impaired one month after fracture, partial recovery was seen by the end of the fourth month regardless of pattern of hip fracture either femoral neck or intertrochanteric. Fierens J et al (*74*) concluded that elderly hip fracture patients of 70 years or older after prospective follow-up of at least one-year, their

functional status upon hospital discharge is the most powerful factors influencing the quality of life after surgery. Age, gender and cardio-pulmonary status were main factor influenced mortality rate.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Question

1. Primary research question

“What is the quality of life for hip fracture patients assessed with MOS SF-36 Thai version 2 ? ”

2. Secondary research questions

“Do different socio-demographic characteristics below determine different quality of life assessed with MOS SF-36?"

(1) Marital Status
(2) Educational Status
(3) Financial Status
(4) Monthly Income Level
(5) Person Living with Patients
(6) Person Taken Care of Patients
(7) Medical Reimbursement Scheme
(8) Perceived Cause Leading to Fracture
(9) Reason for Hospital Visit
(10) Perceived Cause of Fracture
(11) Status before Hospital Admission
(12) Alcohol and smoking status
(13) Gender

"Do different clinical characteristics below determine different quality of life assessed with MOS SF-36?

(1) Age 65 year old (<65 and ≥65 years old)
(2) Pattern of Hip fracture (Femoral neck and Intertrochanteric)
(3) Hospital Discharge Type (Surgical and non-surgical)
(4) Comorbidity (presence and absence)
(5) B M I (<20kg/m2 and ≥ 20kg/m2)

3.2. Objectives

1. Primary objective

To determine quality of life for hip fracture patients by using MOS SF-36 (Thai version)

2. Secondary objectives

To determine the quality of life for hip fracture patients by using MOS SF-36 (Thai) in selected soci-demographic and clinical characteristics of hip fracture patients as follows:

(1) Marital status

(2) Educational status

(3) Financial status

(4) Monthly income level

(5) Person living with patients

(6) Person taken care of patients

(7) Medical reimbursement scheme-medical insurance

(8) Perceived incidence/cause leading to fracture

(9) Reason for hospital visit

(10) Perceived nature of hip fracture (first incidence/recurrence/sustained)

(11) Status before hospital admission

(12) Alcohol drinking and smoking status

(13) Gender

(14) Age 65 year old (<65 / ≥65 years old)

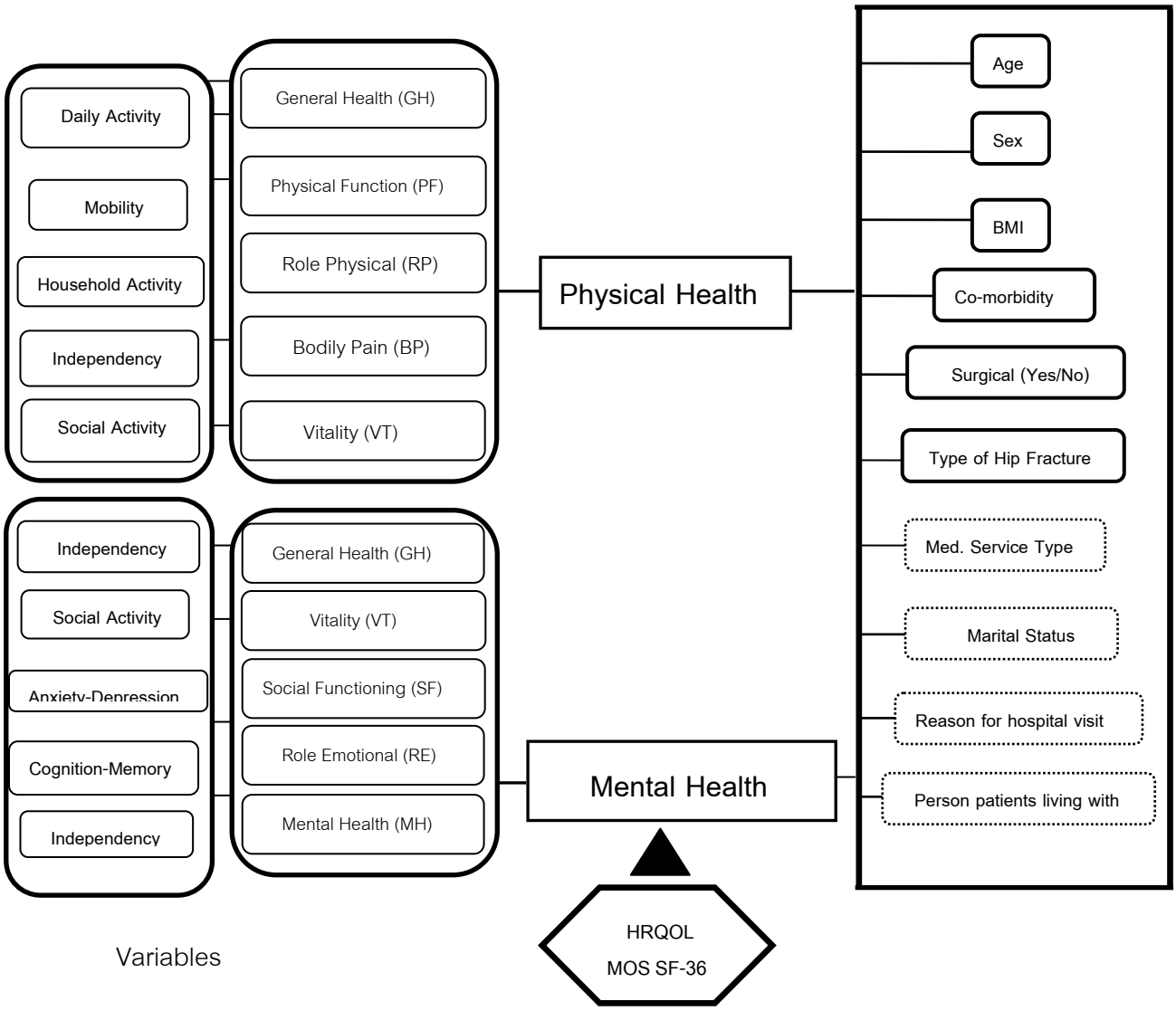
(15) Pattern of hip fracture (Femoral neck / Intertrochanteric)

(16) Type of hospital management / discharge type (Surgical / non-surgical)

(17) Comorbidity (presence / absence)

(18) B M I (<20kg/m^2 / ≥ 20kg/m^2)

3.3 Conceptual Framework



Variables

(1) Independent - variables

1. Marital status 2.Educational status 3. Financial status
4. Monthly income level 5. Person living with patients
6. Person taken care of patients 7. Medical reimbursement scheme
8. Perceived incidence/cause leading to fracture
9. Reason for hospital visit 10. Perceived nature of fracture
11. Status before hospital admission 12. Alcohol and smoking status
13. Gender
14. Age (years) and age level (<65 / ≥65 years old)
15. Pattern of hip fracture (Femoral neck / Intertrochanteric)

16. Hospital management/discharge type (Surgical / non-surgical)

17. Comorbidity (presence / absence)

18. B M I (<20kg/m^2 / ≥ 20kg/m^2)

(2) Dependent-primary outcome variables

1. Global health score (Total MOS SF-36) (GLOBAL)

2. Eight symptoms dimensions (sub-scores)

2.1 Physical functioning score (PF)

2.2 Role limiting physical function score (RP)

2.3 Bodily pain score (BP)

2.4 General health score (GH)

2.5 Vitality score (VT)

2.6 Social functioning score (SF)

2.7 Role limiting emotional function (RE)

2.8 Mental health score (MH)

3. Two domains component summary

3.1 Physical summary component (PCS)-Physical health

3.2 Mental summary component (MCS)-Mental health

3.4. Key words

Quality of life (QOL), Health-Related Quality of Life (HRQL),
Medical Outcomes Study 36-item Short Form Health Survey (MOS SF-36)
Hip fracture

3.5 Operational definition (*28-29*)

- Hip fracture is defined by ICD-10 Criteria, meaning fracture of femoral neck and fracture of acetabulum and is at least classified as 3 types of hip fracture, 1) femoral neck fracture and 2) intertrochanteric fracture 3) subtrochanteric fracture

- Repeated hip fracture is defined by subsequent fracture (of any types) following the first admission of hip fracture in the period of one year.
- Sustained hip fracture is defined by fracture free (of any types) following the first admission of hip fracture in the period of one year.
- Primary hip fracture is defined by the first occurrence or the first admission of hip fracture which is reason being for patient seeking hospital visit.
- Pre-defined incidence leading to hip fracture is defined as 1) Slippery falls 2) Falls from other reasons and 3) Other reason
- Patient's perceived cause of fracture is defined as 1) First-time occurrence of fracture 2) Recurrent fracture
- Type of hospital discharge are defined by 1) Surgical discharge and 2) Non-surgical discharge based on hospital chats/medical records, and discharge subsequent to certain period of hospitalization after acute hospital admission diagnosis as hip fracture
- Comorbidity is defined by the presence or absence of each of comorbid disease diagnosed by physician such as hypertension, coronary heart disease, T2DM and others.
- Health-related quality of life (HRQL) is defined as quality of life assessed with the Thai version MOS SF-36 version 2.0 containing 36 questions (items) which measures 8 health concepts (constructs) and health transition (HT). (Each of 36 items of SF-36 questionnaires are defined according to symptoms dimensions and standardized of the score from 0 to 100 are based on symptoms dimension)
- The eight health concepts are Physical function (PF), Role limiting physical (RP), General health (GH), Vitality (VT), Social functioning (SF), Role limiting emotional (RE) and Mental health (MH). These eight health concepts or profiles are grouped into two major components as Physical Component Summary (PCS) and Mental Component Summary (MCS). The Global score is the score of both PCS and MCS.

The PCS comprises 5 scales i.e. PF, RP, BP, GH and VT whereas MCS also comprises 5 scales i.e. GH, VT, SF, RE and MH. The questionnaires in MOS SF-36 vary in number

of possible answers and direction. It needs to be standardized at all eight health concepts or dimensions. After standardization of the MOS SF-36, a score for each question is first recorded. A multi-item raw scale score is then computed by simply summing up all item scores in that scale. These raw scale scores are finally transformed to a 0 –100 scale so that a higher score indicates a better state of health. The PCS and MCS are the average of all scale scores in that dimension.

3.6. Research Design

Descriptive design with cross-sectional analysis of MOS SF-36 for Thai hip fracture patients

3.7. Research Methodology

A cross-sectional health-related quality of life assessment of Thai hip fracture patients by using self-rated MOS SF-36

3.7.1. Population and sample

Target population

Any hip fracture patients age above 50 years admitted in any Thai public hospitals

Sample population

- Any hip fracture patients age above 50 years admitted in Chiangrai Hospital who have already been discharged from the hospital over 6-months
- Consecutive /prospective sampling of 130 hip fracture patients qualified in eligible selection.
- Hip fracture patient samples fit in inclusion/exclusion criteria was randomly monitored after hospital discharge

- Prospective hip fracture patients monitored before hospital discharge was conducted to ensure that these pre-discharge patients could be followed-up for some period of time. The above is essential for further patient recruitment to ensure sufficient post-discharge patients as needed. Patients monitored before hospital discharged was conducted by research assistant.

3.7.2. Eligibility selection/Inclusion-Exclusion criteria.

Any Thai hip fracture patients, age above 50 years admitted in Chiangrai Hospital.

Inclusion criteria:

1. Diagnosed as hip fracture as per ICD-10 by attending orthopedists.
2. Hip fracture diagnosis is confirmed by positive radiography.
3. No contraindication for health-related quality of life assessment with MOS SF-36 due to deleterious complications.

Exclusion criteria:

1. Patients who are not willing to complete the questionnaire or are not allowed the assessment of Thai MOS SF-36 version 2.0
2. Patients with suspected of psychiatric disease e. g.:- psychosis.
3. Having other metabolic bone diseases and other chronic diseases affecting bone metabolism or homeostasis of calcium or phosphorus including (see operational definition). 1) Renal diseases 2) Hepatic diseases 3) Neuropsychiatric Disease.
4. Having diagnosis with presence of cancer (s) and known bone metastasis

3.7.3. Sample size determination

Sample size estimation was based on the estimation of mean quality-of-life score. Previous study by Jithathai J et al(*18*) in hip fracture patients living in community and no debilitating complication revealed a standard deviation (SD) of mean SF 36 about 11 whereas that by Charoencholvanich K et al.(*25*) among osteoarthritis patients whom were subjected to total knee arthroplasty showed a SD of physical components about 18. As such, a SD of 15 was selected for sample size calculation in this study. Using the allowable error (d) of 3 (i.e., 20% of SD) and 95% confidence, a sample of 97 patients was required as shown below.

$$n = [(Z_{\alpha/2} \ SD) / d]^2$$

Thus, $n = [(1.96 \times 15) / 3]^2 = 96.04 = 96$

Assuming 75%-80% response rate, a sample size of 125 patients was needed.

3.7.4 Randomization and allocation concealment.

This study allows prospective consecutive recruitment of patients since there is a scarcity of hip fracture patients, all patients who met the inclusion criteria were screened until 97 patients was reached. Therefore, no randomization and allocation concealment was required. The eligible patients data were transferred to data source in clinical record form by research assistant data collector and the MOS SF-36 Short-Form Health Survey were mailed directly to eligible patients during 1-7 February 2011. From the process of obtaining socio-demographic data and clinical information to obtaining patients response to MOS SF-36, these were carried out separately.

All socio-demographic data, clinical data and the mail responded MOS SF-36 were transferred to the SPSS file for further data cleaning and preparation for statistical analysis.

3.7.5 Research Instrument

1. A self-administered health-related quality of life questionnaire, Medical Outcomes Study 36-item Short-Form Health Survey (MOS SF-36) Thai version (Appendix C)
2. Clinical Record form for patient data transferred from medical records (Appendix D)
3. Mailing letter and reminder follow-up mail and phone calls

3.8. Data Collection

Stage 1. The process of obtaining patient socio-demographic and clinical data was collected from medical records and interviewed by research assistant data collector after obtaining patients informed consent conducted in Chaingrai Hospital during the period of inclusion-exclusion. All patients' addresses were prepared as concealment separately as a follow-up mailing list to obtain the MOS SF-56 from patients. (in stage 2)

Stage 2. The concealed mailing list with address and telephone numbers from data collector was prepared after identification that all participants had been discharged over 6 months. The introduction with thank you letter, reminder letter and patient's health education book MOS SF36 questionnaire and an envelope with prepaid postage were all provided and mailed directly to all participants.

Stage 3. From the process of obtaining patients response to MOS SF-36 and obtaining socio-demographic data and clinical information were separately carried out.
Stage 4. All socio-demographic data, clinical data and the mail responded MOS SF-36 was transferred to the SPSS file for further data cleaning and preparation for statistical analysis.

3.9. Data Transformation and Statistical Analysis

1. Raw data from the MOS SF-36 was transformed to standardized format with the total score of 100 as per 8 dimensions of symptoms, 2 domain summaries of component of physical functions and mental functions and overall or global score

2. Each of scoring of eight health concepts such as physical function (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE) and mental health (MH) were calculated and analyzed separately. These eight health profiles were grouped into two major components as Physical Component Summary (PCS) and Mental Component Summary (MCS). The PCS comprises 5 scales i.e. PF, RP, BP, GH and VT whereas MCS also comprises 5 scales i.e. GH, VT, SF, RE and MH were analyzed separately.

3. All independent variables were classified either as continuous or nominal data, as per socio-demographic segments and clinical information. (age, gender, monthly income level , marital status, education status , weight –height , person whom patient lives with, and person who takes care of patients, type of medical and welfare service, underlying co-morbidities, reasons for hospital visit, pattern of hip fracture (femoral neck or -intertrochanteric), Type of hip fracture perceived by patient (Primary hip fracture or Repeated/sustained hip fracture), Type of hospital management (surgical or non-surgical) confirmed by X-ray with diagnosis by orthopedist in medical records. .Type of hospital discharge (confirmed by medical records and hospital admission). The MOS SF-36 Thai version as dependent variables were health-related quality of life or medical outcomes health survey score received from mail response by patient and proxy.

3.10 Data and Statistical Analysis

Raw data was transferred to SPSS version 13.0 for data cleaning and data management. MOS SF-36 Scoring as carried out by SPSS version 13.0

1. Descriptive statistics were reported for each characteristic as per demographic variable of the patients.

2. For primary objectives, quality of life score from MOS SF-36 both total score and sub-score for all hip fracture patients reported using descriptive statistics

3. For reliability of MOS SF-36, the Cronbach's Alpha Coefficient was analyzed and reported for all 36-item, for 8 dimension symptom domains and for 2 domains of summary components of physical functions, mental functions and for global score.

4. For secondary objectives, nonparametric test (Mann-Whitney U-test and Kruskall Vallis test) was applied to compare the MOS SF-36 total (global score) and 8 dimensions of sub-score and 2 domains component summary score for selected independent variables both socio-demographics and clinical factors.

5. All statistical data analysis was performed by the SPSS software (version 16.0)

6. Descriptive statistical data was provided for additional results for the purpose of discussion and supports for conclusion.

3.11 Ethical Consideration

The study was defined as a minimal risk and therefore expedited for ethic committee approval at Chiangrai Hospital. The study did not involve patient intervention, patient recruitment or treatment of routine medical care and practice in the hospital. However, patient informed consent was obtained with agreement from patients or patients' proxy to participate. All patient data was transferred and recoded to CRF with subsequent MOS SF-36 mail responder. All data was collected with strict confidentiality in order to protect patients' confidentiality. The study was submitted and approved by Chiangrai Hospital ethical review board.

3.12 Limitation

The hip fracture patient consecutive sampling from Chiangrai Hospital alone may not be truly representative of hip fracture patients in an urbanized or metropolitan setting, or representative of all population of Thai hip fracture patients.

Some hip fracture patient assumed a stabilized condition during the period of data collection. These patients may have multiple fractures during the time of follow-up, however once the patient was screened, only a minimum of over 6 month post-discharge was planned for obtaining MOS SF-36 mails survey. Since, an actual period over 6-months post-discharge was unavailable to specify. This should be well aware of shortcoming of period-effect that could have deviated with effect to patient response.

Hip fracture patients from Chiangrai Hospital are coded and diagnosed as of ICD-10 as surgical discharge (S720) or non-surgical discharge(S722), these hip fracture patients may possibly incur secondary hip fracture due to trauma or accident, however primary diagnosis at the time of hospital admission was assumed and taken into account as hip fractures.

The status of recurrent fracture or first fracture is only a perceived status by patients during patient interviews. This is due mainly the unavailability or scarcity of medical history especially of hip fractures who were transferred from remote community hospitals or tertiary-care patients referred from other community hospitals.

The hip fracture patients may have more than one type of fracture including peripheral fracture, however only they are predominated by hip fractures as described by the hospital admission diagnosis as hip fracture.

CHAPTER IV

RESULTS

4. RESULTS

Patient recruitment was initiated as early as January - March 2010 and we were able to recruit 121 patients to participate. All patients had confirmed an agreement by giving informed consent. These patients had been primarily followed-up for the one year cost of illness study and they were all discharged for home rehabilitation between 6 -12 months. The MOS SF-36 Short Form Survey (Thai) was sent directly to these 121 hip fracture patients during February 2011. Out of these, 17 patients died which accounts for 14% within one-year mortality. There were 37 patients (31%) non-responder and 67 patients (55%) responded to the MOS SF-36. Further patient recruitment began with the prospecting of OPD patients consecutively who had also confirmed an agreement by giving informed consent during September-November 2010. There were 80 hip fracture patients prospected for follow-up. The MOS SF-36 Short Form Survey (Thai) had sent directly to these 80 hip fracture patients during March 15th - April 1st, 2011. Out of these, 4 patients died and 24 patients (30%) non-responder and only 52 patients (65%) responded to the MOS SF-36.

All patients socio-demographic data and clinical information from medical records were transferred to clinical record form provided and then matching with the MOS SF-36 Short Form Health Survey for final data preparation, data cleaning and data analysis during May 2011. As above, an analysis of research findings are given below

4.1 Descriptive statistics - socio-demographic & clinical characteristics of hip fracture

4.2 Quality of Life of all hip fracture patients assessed with MOS SF-36

4.3 Socio-demographic characteristics & MOS SF-36 Score by different subgroups

4.4 Clinical characteristics & MOS SF-36 Score by different subgroups

4.5 Reliability analysis for MOS SF-36 Score from Hip Fracture at Chiangrai Hospital

4.6 Reliability analysis for MOS SF-36 Score (Hip fracture Vs Chronic Low Back Pain)

4.7 MOS SF-36 Score for Hip Fracture - Vs Thai Healthy Volunteers

4.8 MOS SF-36 Score for Hip Fracture Vs Some Musculoskeletal Disorders

4.9 MOS SF-36 Score for Hip Fracture Vs Some Neurological Disorders

4.1 Descriptive statistics - socio-demographic & clinical characteristics of hip fracture

4.1.1 Descriptive statistics - socio-demographic characteristics of hip fracture

Overall 119 hip fracture patients participated in this survey. Demographic characteristic details are given in table 1. All patients' age were between 50 years old and 104 years old. There were more men (57.2%) than women (42.8%). There were more intertrochanteric fractures (64.8%) than femoral neck fractures (35.2%). There were more hip fracture patients with nonsurgical discharge (59.6%) than surgical discharge (40.4%). There were more hip fracture with comorbidity (52.9%) than no-comorbidity (47.1%). The overall socio-demographic and clinical characteristics are given in table 1, and table 2.

Table 1.Socio-demographic characteristic of 119 hip fracture patients

Characteristics		N	Mean (SD) or Number (%)
Mean Age (years)		119	74.7 (11.0)
< 65			23 (19.3)
≥ 65			96 (80.7)
Gender	Male		68 (57.1)
	Female		51 (42.9)
Marital Status	Single		8 (6.7)
	Married - Spouse		46 (38.7)
	Divorced		5 (4.2)
	Widow		60 (50.4)
Educational Status	None		49 (41.1)
	Primary or lower		44 (36.9)
	Secondary		16 (13.4)
	College or University		10 (8.6)
Financial Status	Sufficient		9 (7.6)
	Insufficient		53 (44.5)
	Insufficient-relative help		57 (47.9)
Monthly Income Level	No income		50 (42.0)
(THB)	<5,000		45 (37.8)
	5,000-10,000		23 (19.3)
	10,000-30,000		1 (0.8)
Person living with	Son - or Daughter or both		94 (78.9)
patients	Spouse		15 (12.6)
	Family-Relative		10 (8.4)
	Other		0

Table 1.Socio-demographic characteristic of 119 hip fracture patients (continued)

Characteristics		N (119)	Mean (SD) or Number (%)
Person taken care of patients	Son - or Daughter or both		62 (52.1)
	Spouse		15 (12.6)
	Family-Relative		37 (30.3)
	Other		5 (4.2)
Medical Reimbursement Scheme	Universal Coverage		111 (93.2)
	State Welfare		5 (4.2)
	Relative supports		1 (0.8)
	Personal expense		1 (0.8)
	Other		1 (0.8)
Perceived incidence leading to hip fracture	Stair/Step falls		14 (11.8)
	Slippery falls		16 (13.4)
	Other falls		82 (68.9)
	Other cause		7 (5.9)
Reason for hospital visit	Fracture incidence		57 (47.9)
	Suspect of fracture		10 (8.4)
	Pain-cannot walk		51 (42.8)
	Other reasons		1 (0.8)
Status before fracture	Walk normal		16 (13.5)
	Walk with supports		66 (55.5)
	Cannot walk		27 (22.6)
	Pain		10 (8.4)
Alcohol drinking status	Non-drinker		75 (63.0)
	Used to drink		30 (25.2)
	Drinker		14 (11.8)
Smoking status	Non-smoker		77 (64.7)
	Used to smoke		28 (23.5)
	Smoker		14 (11.8)

4.1.2 Descriptive statistics - clinical characteristics of hip fracture

Overall 119 hip fracture patients participated in this survey. The clinical characteristic details are given in table 2. All patients have body mass index ranges from 14.27 to 26.16 Kg/m2. For comorbidity, only stabilized hip fracture patients were included in the study and therefore for overall 63 patients with comorbidity, there were 31 patients (26.1%) had Type 2 Diabetes Mellitus, 24 patients (20.2% had hypertension, 5 patients (4.2%) had heart failure and 3 patients (2.5%) had previous stroke and cerebrovascular incidence. Other clinical characteristics are detailed in the table 2.

Table 2.Clinical characteristics of 119 elderly hip fracture patients

Characteristics	N = 119	Mean (SD) or Number (%)
Body Mass Index(Kg/m 2)		18.96 (2.57)
< 20		78 (65.5)
≥ 20		41 (34.5)
Pattern of hip fracture		
Femoral Neck		42 (35.2)
Intertrochanteric		77 (64.8)
Type of hospital management / discharge		
Surgical		48 (40.4)
Nonsurgical		71 (59.6)
Comorbidity		
Absence		56 (47.1)
Presence		63 (52.9)

4.2 Quality of Life of all hip fracture patients assessed with MOS SF-36

4.2.1 Pattern of mails responder of MOS SF-36

Overall 201 patients were recruited. The MOS SF-36 mail respond inclusive of pre-paid postage were sent directly to patients home details of which are given in table 3. Overall responder was only 59.2 % whereas non-responder was 30.3% excluding mortality which was as high as 10.4 %. There were 17 returned mails due to patients' addresses were changed such that mails were not delivered. Should this taken into consideration, the actual mail responder rate were 67%.

4.2.2 Pattern of mails non-responder of MOS SF-36

Overall 44 patients mail non-responder were mainly male 26(64%), femoral neck fracture 35(80%). These patients included 25(57%) presented with comorbidity and only 19 (43%) of patients had no comorbidity. These non-responder group mean age is 64.6 (± 12.1) year olds. The surgical patients represented only by 10(22%) whereas the non-surgical patients was 34(78%) in table 3. The severity of hip fracture in the mail non-responder group may probably indicate their poor baseline health status due to higher femoral neck (80%) in men (64%) and were mainly non-surgical (78%) with comorbidity (57%) as reflected from their present conditions.

Table 3 Pattern of mails responder of MOS SF-36

Period of recruitment	N	Number (%)
January-March 2010	121	
Mailing period February 2011	Responder	67 (55.3)
	Non-responder	37 (30.5)
	Died	17 (14)
August - October 2010	80	
Mailing period April 2011	Responder	52 (65)
	Non-responder	24 (30)
	Died	4 (5)
Total hip fracture patients	201	
	Responder	119 (59.2)
	Non-responder	61 (30.3)
	Died	21 (10.4)
Total MOS SF-36 mailing to all 201 patients		
Type of MOS SF-36 responder	Hip fracture patients	43 (36.1)
	Patients' Proxy	76 (63.8)
Total MOS SF-36 mail non-responder (N=44)		
Mean age (±SD): 64.6 (±12.1) year olds:	Male = 28 (64%) and Female = 16 (36%)	
Pattern of fracture:	Intertrochanteric 11(20%) and Femoral neck 33 (80%)	
Comorbidity:	Presence 25(57%) and no comorbidity 19(43%)	
Type of hospital discharge:	Surgical 10(22%) and Non-surgical 34(78%)	

4.2.3 Quality of Life analysis from total mails responder of MOS SF-36-Patient

The reliability assessment of MOS SF-36 for self-rated both by patient and proxy were provided. These details are given in table 4 for patient-rated (n=43), table 5 for proxy-rated (N=76) and table 6 for all patients (N=119). The reliability assessment compared for both patient-rated and proxy-rated was almost comparable with minor exception for the role emotion score. However, overall scores rated by patient and proxy are not statistically significant different (p=0.788) as details are given in table 7.

Table 4.MOS SF-36 Score for eight health dimensions and summary score of 43 patients

Health dimension	Mean score (SD)	No of items	Cronbach's alpha coefficient
Physical Functioning (PF)	17.2 (21.0)	10	0.945
Role Physical (RP)	31.0 (16.6)	4	0.796
Bodily Pain (BP)	69.5 (18.3)	2	0.853
General Health (GH)	27.2 (9.2)	5	0.597
Vitality (VT)	61.1 (16.1)	4	0.571
Social Functioning (SF)	43.8 (17.5)	2	0.600
Role Emotion (RE)	51.7 (11.7)	3	0.686
Mental Health	61.5 (15.1)	5	0.696
Physical component summary (PCS)[a]	**41.2 (10.6)**	**25**	**0.901**
Mental component summary (MCS)[a]	**49.0 (8.6)**	**19**	**0.787**
Physical component summary (PCS)[b]	36.2 (10.6)	21	0.911
Mental component summary (MCS)[b]	54.5 (10.0)	14	0.775
Physical component summary(PCS)[c]	26.3 (13.2)	17	0.896
Mental component summary(MCS)[c]	61.3 (13.7)	9	0.761
Role component summary(RCS)[c]	44.4 (9.4)	9	0.574
Global health score	43.1 (10.5)	36	0.901

a = proposed by researcher, b = original SF-36, c = proposed by Suzukamo (2010)

Table 5.MOS SF-36 Score for eight health dimensions and summary score of 76 proxy

Health dimension	Mean score (SD)	No of items	Cronbach's alpha coefficient
Physical Functioning (PF)	20.13 (21.5)	10	0.957
Role Physical (RP)	32.3 (13.4)	4	0.886
Bodily Pain (BP)	59.3 (26.6)	2	0.926
General Health (GH)	26.7 (11.5)	5	0.693
Vitality (VT)	58.7 (16.9)	4	0.684
Social Functioning (SF)	44.7 (17.9)	2	0.620
Role Emotion (RE)	43.3 (16.0)	3	0.679
Mental Health (MH)	63.5 (17.5)	5	0.815
Physical component summary (PCS)[a]	**39.4 (12.0)**	**25**	**0.918**
Mental component summary (MCS)[a]	**47.4 (11.0)**	**19**	**0.841**
Physical component summary (PCS)[b]	34.6 (12.3)	21	0.918
Mental component summary (MCS)[b]	52.5 (12.3)	14	0.828
Physical component summary(PCS)[c]	26.7 (14.6)	17	0.899
Mental component summary(MCS)[c]	61.3 (14.7)	9	0.809
Role component summary(RCS)[c]	38.7 (11.2)	9	0.773
Global health score	42.7 (11.1)	36	0.925

a = proposed by investigator, b = original SF-36, c = proposed by Suzukamo (2010)

Table 6.MOS SF-36 Score for eight health dimensions - summary score of 119 patients

Health dimension	Mean score (SD)	No of items	Cronbach's alpha coefficient
Physical Functioning (PF)	19.0 (21.3)	10	0.952
Role Physical (RP)	31.8 (14.6)	4	0.848
Bodily Pain (BP)	63.0 (24.4)	2	0.914
General Health (GH)	16.9 (10.7)	5	0.664
Vitality (VT)	59.5 (16.6)	4	0.641
Social Functioning (SF)	44.4 (17.7)	2	0.610
Role Emotion (RE)	46.3 (15.1)	3	0.695
Mental Health (MH)	62.8 (16.7)	5	0.775
Physical component summary (PCS)[a]	**40.1 (11.6)**	**25**	**0.911**
Mental component summary (MCS)[a]	**48.0 (10.2)**	**19**	**0.822**
Physical component summary (PCS)[b]	35.2 (11.7)	21	0.914
Mental component summary (MCS)[b]	53.2 (11.5)	14	0.809
Physical component summary(PCS)[c]	26.5 (14.2)	17	0.896
Mental component summary(MCS)[c]	61.3 (14.2)	9	0.789
Role component summary(RCS)[c]	39.5 (10.4)	9	0.718
Global health score	43.1 (10.4)	36	0.916

a = proposed by investigator, b = original SF-36l, c = proposed by Suzukamo (2010)

Table 7.MOS SF-36 Score comparison rated by patients (N=43) and Proxy (N=76)

	N= 119		
Health dimensions	Mean score (SD)		* p – Value
	Patients score	Proxy score	
PF	17.2 (21.0)	20.13 (21.5)	0.580
RP	31.0 (16.6)	32.3 (13.4)	0.258
BP	69.5 (18.3)	59.3 (26.6)	0.090
GH	27.2 (9.2)	26.7 (11.5)	0.714
VT	61.1 (16.1)	58.7 (16.9)	0.641
SF	43.8 (17.5)	44.7 (17.9)	0.843
RE	**51.7 (11.7)**	**43.3 (16.0)**	***0.011***
MH	61.5 (15.1)	63.5 (17.5)	0.330
PCS [a]	40.1 (11.6)	39.4 (12.0)	0.630
MCS [a]	49.0 (8.6)	47.4 (11.0)	0.330
PCS [b]	36.2 (10.6)	34.6 (12.3)	0.613
MCS [b]	54.5 (10.0)	52.5 (12.3)	0.429
Global Score	43.1 (10.5)	42.7 (11.1)	0.788

a = proposed by investigator, b = original SF-36, * p-value by Mann-Whitney U Test

4.3 Socio-demographic characteristics & MOS SF-36 Score by different subgroups

4.3.1. MOS SF-36 Score by Marital Status and Educational Status

Since the responding marital status classes are largely unevenly distributed, only 8 single, 5 divorced. The analysis is more meaningful to group into two groups as Widowed-Divorced 65 patients (54.6%) and Married-Single 54 patients (45.6%). From these factors, both groups had reflected poor physical health (score below 20 for both groups). There are no significant differences of the eight dimension score, physical component summary, mental component summary and global score even though overall physical and mental health and global health are in the range of 30-50. The repartition of MOS SF-36 score for each health dimensions are given in table 1.

Since the responding educational status classes are also unevenly distributed, only 10 patients (8.6%) and 16 patients (13.4%) had secondary and higher education. As such, Educational status are grouped as None, Primary or lower, and Secondary and higher which are 49 (41.1%), 44 (36.9%) and 26(21.8%) accordingly. The analysis reflected slightly significant lower for Physical function score (p=0.048) for None and primary education as compared with secondary and higher education whereas for General health score, None and secondary and higher education reflected slightly significant lower than primary education(p=0.042) as also given in table 8.

4.3.2. MOS SF-36 Score by Financial Status and Monthly Income Level

Since the responding financial status classes are largely unevenly distributed, only 9 sufficient, 53 insufficient and 57 need helps from relatives and others. As such, the analysis is more meaningful to group into two groups as Insufficient 53 patients (44.5%) and Sufficient-need relative helps and others 66 patients (55.4%). From these two groups, patients identified with sufficient, need/help from relative and other combined had significantly lower physical health score as compared with the other. (p=0.045) In the contrary, patient identified as insufficient had significantly lower Role emotion score

as compared with the other combined (p=0.018). The overall distribution of health dimension score for each groups are given in table 9.

Since the responding monthly income level classes are also unevenly distributed, only two classes are identified for comparison, for most of the patients 96 (79.8%) with monthly income level less than 5,000 THB and another 24 (20.2%) had identified monthly income level above 5,000 THB. There are no different score in most of the health dimension and domain score with the exception for lower Mental health dimension score for most of patient with monthly income level less than 5,000 THB at p= 0.043.as given table 9.

4.3.3 MOS SF-36 Score by Person Living with Patients and Person Taken Care of Patients

The distribution of classes among patients for the above are grouped into son-daughter and spouse and the rest is others. There are no statistically significant difference for all health dimensions and health domain scores for both groups for person living with patient. In contrast, for persons taking care of patients, son-daughter and spouse reflected higher health dimension scores for Bodily pain (p=0.017), for General health (p=0.019), of Role emotion (p<0.001) and for Mental component summary (p=0.039) which is given in table 10.

4.3.4 MOS SF-36 Score by Medical Reimbursement Scheme

Since the majority of patients 111 (93.2%) were medically reimbursed under the universal coverage (UC) and only 8 (6.8%) are personal and state-welfare coverage. Even though there is a trend for higher health dimension and domain score for patients under the state-welfare and personal spending, there are no statistically significant different details of which is given in table 11.

4.3.5 MOS SF-36 Score by Perceived Incidence/Cause Leading to Fracture - Reason for Hospital Visit

The perceived cause leading to fracture initially is a patient-reported medical event as perceived for their individual health status. Most of the reasons leading to fracture are due to falls. As such, the investigator feels an obligation to obtain the response directly from patients subjected to their individual health perception of individual event leading to fracture. An analysis found that there are 37 (31%) of patients mentioned that slippery falls is the caused leading to fracture and mostly 82 (69.0%) mentioned others falls are incidence leading to fracture. However, both groups reflect no statistically significant health dimension and health domain score. The overall health dimension and domain scores are in table 12.

In case of reason for hospital visit, patients with fracture incidence and pain as main reason accounts for 109 (91.5%) reflect significantly lower health dimension score than the others 10 (8.5%) for Social function (p=0.015), for Role emotion (p=0.032), for Mental health (p=0.029) and for Mental component summary score (p=0.009) which are given in table 12.

4.3.6 MOS SF-36 Score by Perceived Cause of Fracture - Status before Hospital Admission

The perceived cause of fracture initially is a patient-reported adverse outcomes perceived for their individual health status. Most of patients attempt early hospital admission once they should have experiences detrimental changes and may perceived as fracture meanwhile the other delays for hospital admission due to various reasons. Most of patient, even though had acute hospital admission as hip fracture, the diagnosis and investigation confirmation were performed by X-ray and recorded in the medical records, many patients were referred patients from remote community for tertiary care. As such, investigator feel obligation to obtain the response directly from patients

subjected to their individual health perception either first-time fracture 62.1% or recurrent fracture (37.9%). However, this perceived type of fracture is patient- perceived adverse event not that definitely proven reported in medical records due to various type of referral not allow for further crosschecking. An analysis found that there are no statistically significant health dimension and domain score for all different groups as given in table 13.

The status before hospital admission also classes as 37 patients whom cannot walk and pain (31.1%) and patient whom walk normal (only 29) and need supports (53) are grouped to make up 82 (68.9%). There are also no significant different for all health dimension and domain score for both groups as given in table 13.

4.3.7 MOS SF-36 Score by Smoking status and Alcohol Drinking

There are no statistically significant difference in terms of health dimension and health domain score for both different smoking status and alcohol drinking status as given in table.14

Table 8: Socio-demographic characteristics of hip fracture patients and MOS SF-36 scores: - Marital Status and Education Status

Variables / Factors	Frequency N (%)	Mean Score (SD)										
		Physical Function	Role Physical	Bodily Pain	General Health	Vitality	Social Function	Role Emotion	Mental Health	Physical Comp. Summary	Mental Comp. Summary	Global Health
Marital Status												
Widow-Divorced	65(54.6%)	19.5(21.1)	31.2(12.9)	63.1(25.2)	26.4(10.3)	61.7(15.7)	46.5(18.5)	46.0(14.9)	62.6(17.2)	40.4(11.2)	48.6(10.0)	43.5(10.5)
Single-Married	54(45.4%)	18.5(21.1)	32.6(15.5)	62.9(23.6)	27.5(11.2)	56.9(17.3)	41.8(16.4)	46.7(15.4)	63.0(16.2)	39.7(12.0)	47.2(10.6)	42.7(10.4)
p-value*		0.543	0.929	0.596	0.599	0.166	0.189	0.678	0.885	0.827	0.745	0.934
Education Status												
None	49(41.1%)	15.1(19.1)	32.3(13.4)	65.1(23.4)	24.6(10.6)	60.3(17.5)	44.6(15.3)	42.6(45.4)	64.5(16.3)	39.5(10.9)	47.3(9.5)	42.5(9.3)
Primary	44(36.9%)	17.7(21.3)	29.5(16.6)	60.1(24.6)	29.8(9.3)	57.5(17.0)	44.6(19.5)	50.0(13.0)	60.4(16.4)	38.9(12.0)	48.4(10.2)	42.9(11.0)
Secondary and higher	26(21.8%)	28.4(23.2)	35.0(13.0)	64.0(26.10	26.1(12.3)	61.5(14.3)	43.7(19.4)	47.1(16.6)	63.4(17.9)	43.1(11.8)	48.4911.9)	44.6(11.8)
p-value**		*0.048*	0.094	0.482	*0.042*	0.600	0.917	0.081	0.336	0.376	0.667	0.778

* p-value by Mann-Whitney U Test * * p-value by Kruskal-Wallis Test

Table 9: Socio-demographic characteristics of hip fracture patients and MOS SF-36 scores: - Financial Status and Monthly Income Level

Variables /Factors	Frequency N (%)	Mean Score (SD)										
		Physical Function	Role Physical	Bodily Pain	General Health	Vitality	Social Function	Role Emotion	Mental Health	Physical Com. Summary	Mental Com. Summary	Global Health
Financial Status												
Insufficient	53(44.5%)	24.0(22.8)	33.8(12.9)	66.6(24.4)	25.3(11.2)	59.9(16.7)	45.2(18.3)	42.4(115.6)	65.1(16.9)	41.9(11.4)	47.6(10.8)	44.0(10.7)
Sufficient and Need helps	66(55.4%)	15.0(19.3)	30.3(15.7)	60.1(24.1)	28.1(10.2)	59.2(16.5)	43.7(17.2)	49.4914.0)	60.9(16.4)	38.6(11.5)	48.3(9.8)	42.4(10.3)
p-value*		***0.045***	0.061	0.063	0.148	0.762	0.870	***0.018***	0.092	0.109	0.777	0.272
Monthly Income Level												
< 5,000 THB	95(79.8%)	20.0(22.3)	32.8(15.6)	64.5(22.9)	26.8(10.7)	59.6(17.9)	45.3(18.5)	47.0(15.5)	61.3(16.6)	40.7(12.4)	48.0(11.0)	43.7(11.3)
>5,000 THB	24(20.2%)	15.2(16.8)	28.2(9.1)	57.2(29.2)	27.0(10.8)	59.3(9.9)	40.6(13.4)	43.7(13.5)	68.7(15.9)	37.4(6.6)	47.9(6.5)	40.9(5.9)
p-value*		0.490	0.333	0.295	0.960	0.390	0.216	0.222	***0.043***	0.157	0.542	***0.108***

***p-value by Mann-Whitney U Test**

Table 10: Soico-demographic characteristics of hip fracture patients and MOS SF-36 scores: - Person living with patients and Person taken care of

Variables /Factors	Frequency N (%)	Mean Score (SD)										
		Physical Function	Role Physical	Bodily Pain	General Health	Vitality	Social Function	Role Emotion	Mental Health	Physical Com. Summary	Mental Com. Summary	Global Health
Person living with patients												
Son-Daughter and Spouse	109(91.5%)	19.2(21.5)	32.1(14.3)	62.7(25.1)	36.1(10.7)	59.3(17.1)	44.6(18.0)	45.8(15.5)	63.0(17.2)	39.9(11.7)	47.8(10.6)	42.9(10.8)
Others	10(8.5%)	17.0(20.0)	29.1(18.5)	66.0(15.0)	35.0(7.4)	61.8(9.9)	42.5(14.6)	51.6(7.6)	60.5(10.1)	41.8(8.9)	50.3(5.4)	45.1(6.2)
*p-value		0.925	0.377	0.845	0.090	0.757	0.803	0.289	0.429	0.635	0.509	0.527
Person taken care of patients												
Son-Daughter and spouse	77(64.7%)	19.2(21.1)	32.5(14.9)	67.6(22.5)	28.6(10.3)	60.6(18.2)	45.2(17.3)	50.5(13.8)	61.4(16.5)	40.3(11.8)	49.3(10.3)	43.7(10.7)
Others	42(35.2%)	18.6(22.0)	30.6(14.2)	60.5(27.2)	23.8(10.8)	57.5(13.1)	42.8(18.5)	38.6(14.4)	65.3(16.9)	39.6(11.2)	45.6(9.7)	42.0(9.9)
p-value*		0.695	0.383	***0.017***	***0.019***	0.097	0.473	***<0.001***	0.155	0.662	***0.039***	0.407

*p-value by Mann-Whitney U Test

Table 11: Socio-demographic characteristics of hip fracture patients and MOS SF-36 scores: - Medical Reimbursement Scheme

Variables /Factors	Frequency N (%)	Mean Score (SD)										
		Physical Function	Role Physical	Bodily Pain	General Health	Vitality	Social Function	Role Emotion	Mental Health	Physical Com. Summary	Mental Com. Summary	Global Health
Medical Reimbursed Scheme												
Universal Coverage	111(93.2%)	18.1(21.2)	31.8(14.6)	62.6(24.9)	26.6(10.7)	59.7(16.7)	45.2(17.5)	45.7(15.3)	62.6(16.8)	39.8(11.6)	48.0(10.4)	42.9(10.6)
Other	8(6.8%)	31.8(20.3)	32.2(15.0)	68.7(15.5)	30.6(10.8)	57.6(15.0)	32.8(17.5)	54.1(9.9)	65.6(15.9)	44.2(10.6)	44.2(7.6)	45.3(7.8)
p-value*		0.068	0.916	0.633	0.324	0.641	0.065	0.161	0.757	0.370	0.924	0.500

*p-value by Mann-Whitney U Test

Table 12: Socio-demographic characteristics of hip fracture patients and MOS SF-36 scores: -Perceived incidence /caused leading to fracture-Reason for Hospital Admission

Variables /Factors	Frequency N (%)	Mean Score (SD)										
		Physical Function	Role Physical	Bodily Pain	General Health	Vitality	Social Function	Role Emotion	Mental Health	Physical Com. Summary	Mental Com. Summary	Global Health
Perceived cause leading to fracture												
Slippery falls	37(31.0%)	22.0(23.1)	30.8(14.4)	61.8(22.1)	28.2(11.4)	59.6(14.0)	48.3(18.2)	49.0(11.9)	65.2(14.5)	40.5(10.9)	50.1(9.2)	44.5(9.2)
Other falls	82(69.0%)	17.7(20.4)	32.3(14.8)	63.5(25.4)	26.3(10.4)	59.5(17.7)	42.6(17.3)	45.1(16.3)	61.7(17.5)	39.9(11.8)	47.0(10.6)	42.5(10.9)
p-value*		0.436	0.541	0.262	0.454	0.864	0.123	0.228	0.397	0.798	0.151	0.268
Reason for hospital admission												
Fracture incidence & Pain	109(91.5%)	18.8(21.2)	31.9(14.8)	61.9(24.9)	26.6(10.7)	59.1(16.8)	43.2(17.6)	45.5(15.4)	61.8(16.9)	39.6(11.6)	47.2(10.1)	42.5(10.3)
Other reasons	10(8.5%)	21.5(23.1)	31.6(12.9)	75.0(12.6)	30.5(10.1)	64.6(13.3)	57.5(13.4)	55.0(7.0)	73.5(8.5)	44.6(10.2)	56.2(7.7)	49.6(9.9)
p-value*	0.808	0.876	0.283	0.270	0.392	0.392	***0.015***	***0.032***	***0.029***	0.193	***0.009***	0.071

*** p-value by Mann-Whitney U Test**

Table 13: Socio-demographic characteristics of hip fracture patients and MOS SF-36 scores: - Perceived Fracture Type & Status before hospital admission

Variables /Factors	Frequency N (%)	Mean Score (SD)										
		Physical Function	Role Physical	Bodily Pain	General Health	Vitality	Social Function	Role Emotion	Mental Health	Physical Com. Summary	Mental Com Summary	Global Health
Perceived Fracture Type												
First-time Fracture	74(62.1%)	16.6(19.1)	31.3(14.7)	61.3(24.9)	27.0(10.4)	59.1(15.8)	43.7(16.4)	46.9(14.1)	62.5(16.0)	39.0(10.8)	47.8(9.6)	42.5(9.7)
Recurrent Fracture	45(37.9%)	23.1(24.3)	32.8(14.5)	65.7(23.4)	26.7(11.2)	60.2(17.9)	45.5(19.7)	45.3(16.7)	63.2(18.0)	41.7(12.6)	48.2(11.3)	44.2(11.6)
p-value*		0.290	0.636	0.267	0.840	0.453	0.825	0.559	0.635	0.234	0.943	0.548
Status before fracture												
Supporting walk	82(68.9%)	17.4(21.4)	32.1(15.2)	62.4(24.6)	26.5(10.3)	60.9(15.1)	43.2(17.0)	46.4(14.9)	62.8(17.0)	39.9(11.8)	48.0(9.6)	42.9(10.3)
Cannot walk and pain	37(31.1%)	22.7(20.9)	31.3(13.3)	64.3(24.1)	27.7(11.5)	56.4(19.2)	46.9(19.1)	46.1(15.6)	82.8(16.2)	40.5(11.7)	48.0(11.7)	43.5(10.9)
p-value*		0.199	0.933	0.812	0.689	0.372	0.374	0.833	0.998	0.609	0.741	0.522

*** p-value by Mann-Whitney U Test**

Table 14: Soci-demographic characteristics of hip fracture patients and MOS SF-36 scores: -Smoking and Alcohol Drinking Status

Variables /Factors	Frequency N (%)	Mean Score (SD)										
		Physical Function	Role Physical	Bodily Pain	General Health	Vitality	Social Function	Role Emotion	Mental Health	Physical Com Summary	Mental Com Summary	Global Health
Smoking Status												
Used to smoke	28(23.5)	18.5(19.7)	29.1(12.1)	60.3(23.9)	26.6(11.8)	58.2(17.6)	39.7(17.6)	46.7(16.8)	62.5(19.0)	38.5(11.1)	46.7(10.2)	41.9(9.8)
Nonsmoker	77(64.7)	20.2(22.4)	33.8(15.3)	33.5(15.3)	26.3(10.6)	59.2(15.9)	46.1(17.9)	45.6(15.0)	62.9(16.3)	40.8(11.6)	54.8(10.4)	43.6(10.7)
Smoker	14(11.8)	13.5(18.5)	26.7(13.9)	60.7(27.8)	30.7(8.2)	63.8(18.3)	44.6(16.0)	49.4(12.4)	62.5(14.9)	39.1(12.2)	50.2(9.3)	42.9(10.4)
p-value**		0.680	0.129	0.668	0.325	0.838	0.318	0.649	0.945	0.654	0.562	0.840
Alcohol drinking status												
Used to drink	30(25.2)	17.5(21.1)	28.8(15.4)	62.3(22.2)	26.5(10.5)	60.2(18.0)	45.0(15.6)	48.3(14.4)	61.6(18.5)	39.0(12.2)	48.3(10.6)	42.5(10.9)
Non-drinker	75(63.0)	19.1(21.0)	32.8(13.9)	65.3(24.2)	26.4(11.2)	59.1(6.1)	44.8(18.6)	45.1(15.9)	64.1(16.5)	40.5(11.1)	47.9(10.4)	43.4(10.3)
Drinker	14(11.8)	22.1(24.5)	33.3(16.6)	52.1(28.0)	30.7(7.8)	60.2(16.9)	41.0(17.9)	48.8(12.1)	58.2(13.5)	39.7(13.0)	47.8(9.5)	42.6(11.1)
p-value**		0.728	0.354	0.168	0.292	0.832	0.772	0.700	0.303	0.685	0.847	0.720

** p-value by Kruskal-Wallis test

4.4 Clinical and some demographic characteristics & MOS SF-36 Score by different subgroups

4.4.1 MOS SF-36 Score by Gender

For gender difference, women significantly reflected scores of 30.8(9.3) better than men 23.9(10.3) at $p<0.001$ for general health, and reflected 52.4(12.9) which is significantly better than men 41.7 (15.1) for role emotion at $p<0.001$. Moreover, the mental summary component score of women at 50.5(8.7) is also significantly better than men 46.1(10.9) at $p = 0.013$ (table 15)

4.4.2 MOS SF-36 Score by Age 65 year old

For different ages of 65 years or older, and for different BMI of 20 kg/m^2, there are no different reflects for all symptoms dimension and domain of component summary scores (table 15)

4.4.3 MOS SF-36 Score by Pattern of Hip fracture and Hospital Discharge Type

For different types of hip fracture, confirmed by X-ray as major fracture in the medical records as femoral neck and intertrochanteric, and for types of hospital discharge either surgical discharge or non-surgical discharge during admission and discharge, there are no different reflections for all symptom dimensions and domain of component summary score (table 16).

4.4.4 MOS SF-36 Score by Comorbidity.

The major comorbid diseases reported were 25 hypertensive patients, 19 T2DM patients and 19 patients with multiple cardio-cerebrovascular disease. There were outstanding difference reflected for hip fracture patients in the absence and presence of co-morbidity. These were significantly observed for general health score 35.4(6.9) and 19.3(7.3) $p<0.001$, for vitality score 66.3(17.0) and of 53.5(13.2) $p<0.001$, for physical component summary score 43.2(11.1) and of

37.3(11.3) p = 0.003, for mental component summary score 52.6(10.1) and of 43.9(8.3) p <0.001, and finally for global score 46.7(10.1) of 39.9(9.7) p<0.001 (table 16)

Table 15: Clinical characteristics and some demographics of hip fracture patients and MOS SF-36 scores: - Gender, Age and BMI

Variables /Factors	Frequency N (%)	Mean Score (SD)										
		Physical Function	Role Physical	Bodily Pain	General Health	Vitality	Social Function	Role Emotion	Mental Health	Physical Comp. Summary	Mental Comp. Summary	Global Health
Gender												
Male	68(57.1)	19.9(21.7)	31.4(15.2)	63.7(25.6)	23.9(10.3)	56.5(16.7)	43.5(18.3)	41.7(15.1)	64.7(16.2)	39.1(16.6)	46.1(10.9)	41.7(11.2)
Female	51(42.9)	17.9(20.9)	32.5(13.9)	62.1(22.8)	30.8(9.3)	63.6(15.7)	45.5(16.9)	52.4(12.9)	60.2(17.1)	41.4(19.5)	50.5(8.7)	44.9(9.1)
p-value*		0.674	0.757	0.440	***<0.001***	***0.017***	0.543	***<0.001***	0.166	0.257	***0.013***	***0.103***
Age												
< 65	23(19.3)	21.7(23.8)	32.7(18.0)	67.3(21.3)	27.1(9.2)	61.3(17.6)	44.0(18.0)	48.5(16.0)	60.8(19.2)	42.0(11.7)	48.3(10.5)	44.1(10.3)
≥ 65	96(80.7)	18.4(20.8)	31.6(13.8)	62.0(25.0)	26.8(11.1)	59.1(16.4)	44.5(17.7)	45.8(14.9)	63.2(16.1)	39.6(11.5)	47.9(10.2)	42.9(10.5)
p-value*		0.417	0.523	0.311	0.857	0.255	0.912	0.322	0.626	0.465	0.824	0.798
B M I												
>20 Kg/m 2	78(65.5)	16.9(19.9)	30.3(14.0)	62.8(24.1)	27.3(10.3)	59.7(16.8)	46.1(17.0)	45.9(15.0)	63.8(16.5)	39.4(10.4)	48.5(10.2)	42.8(9.9)
≥20 Kg/m 2	41(34.5)	23.1(23.4)	34.8(15.4)	63.4(25.1)	26.2(11.6)	59.2(16.4)	41.1(18.8)	47.1(15.4)	60.8(16.9)	41.3(13.4)	46.9(10.4)	43.6(11.5)
p-value*		0.171	0.090	0.540	0.561	0.883	0.156	0.684	0.356	0.445	0.325	0.693

* p-value by Mann-Whitney U Test

Table 16: Clinical characteristics of hip fracture patients and MOS SF-36 scores: - Discharge type-Hip fracture pattern and Presence of Comorbidity

Variables /Factors	Frequency N (%)	Mean Score (SD)										
		Physical Function	Role Physical	Bodily Pain	General Health	Vitality	Social Function	Role Emotion	Mental Health	Physical Comp. Summary	Mental Comp. Summary	Global Health
Discharge type												
Nonsurgical	71(59.6)	18.5(21.4)	30.2(14.1)	66.8(22.1)	27.3(11.3)	60.3(16.6)	46.4(17.1)	45.7(14.8)	64.2(15.7)	40.6(11.1)	48.8(10.0)	43.9(9.9)
Surgical	48(40.4)	19.7(21.5)	34.2(15.2)	57.4(26.7)	26.2(9.8)	58.4(16.7)	41.4(18.2)	47.2(15.5)	60.7(18.0)	39.2(12.1)	46.8(10.6)	41.9(11.3)
p-value*		0.796	0.104	0.055	0.626	0.644	0.120	0.511	0.281	0.665	0.280	0.386
Co-morbidity												
Presence	63(52.9)	16.2(22.7)	31.1(15.2)	66.2(26.1)	19.3(7.3)	53.5(13.2)	43.6(18.8)	41.1(12.2)	61.9(15.8)	37.3(11.3)	43.9(8.3)	39.9(9.7)
Absence	56(47.1)	22.2(19.8)	32.7(14.2)	59.4(22.5)	35.4(6.9)	66.3(17.0)	46.4(16.7)	52.2(15.6)	63.7(17.5)	43.2(11.1)	52.6(10.1)	46.7(10.1)
p-value*		0.103	0.448	0.115	***<0.001***	***<0.001***	0.630	***<0.001***	0.698	***0.003***	***<0.001***	***<0.001***
Hip Fracture												
Femoral	42(52.2)	17.1(19.6)	33.5(15.1)	57.3(29.4)	25.8(9.4)	57.7(16.8)	41.6(16.9)	44.2(16.3)	61.4(17.4)	38.3(12.3)	46.1(9.5)	41.4(11.1)
Inter-trochanter	77(64.8)	20.1(22.2)	30.9(14.4)	66.1(20.7)	27.5(11.3)	60.5(16.5)	45.9(18.0)	47.5(14.4)	63.5(16.4)	41.0(11.0)	49.0(10.5)	44.0(10.0)
p-value*		0.521	0.218	0.206	0.438	0.367	0.244	0.291	0.467	0.282	0.119	***0.188***

* p-value by Mann-Whitney U Test

4.5 Reliability analysis for MOS SF-36 Score from Hip Fracture at Chiangrai Hospital

The reliability analysis of MOS SF-36 score for physical health summary score revealed with some outstanding Cronbach's alpha reliability coefficient for physical function (0.952), role physical (0.848), bodily pain (0.914) Mental health (0.775) and physical component summary (0.911) and all MOS SF-36 36 items (0.916). However, some minor shortcomings for the score reliability were noted for social functioning (0.610), Role emotion (0.695), Vitality (0.641) and General health (0.664). However, overall Mental health summary scores which reflected Cronbach's alpha coefficient less than 0.822 and for Physical health summary scores (0.911) respectively.(table 17)

Table 17 Reliability test- Cronbach Alpha's Coefficient

SF-36 V2 variables	Number of items	Cronbach's alpha coefficient
MOS SF-36	36	0.916
Physical health summary score		*0.911*
Physical functioning (PF)	10	0.952
Role physical (RP)	4	0.848
Bodily pain (BP)	2	0.914
General health (GH)	5	0.664
Vitality (VT)	4	0.641
Mental health summary score		*0.822*
General health (GH)	5	0.664
Vitality (VT)	4	0.641
Social functioning (SF)	2	0.610
Role emotion (RE)	3	0.695
Mental health (MH)	5	0.775
Physical health component summary (PCS)	5	0.911
Mental health component summary (MCS)	5	0.822
Symptoms dimensions (domain) (PF,RP,BP,GH,VT,SF,RE,MH)	8	0.769
Symptoms summary components (PCS, MCS)	2	0.831

4.6 Reliability analysis for MOS SF-36 Score (Hip fracture Vs Chronic Low Back Pain)

Since the same MOS SF-36 were employed for evaluation of health-related quality of life for both hip fracture patients at Chiangrai Hospital (N=119) and Chronic low back pain patients at Srinagarind Hospital (N= 100), the Cronbach's alpha reliability coefficient for reliability analysis of the same scale were compared as given in table 18.

The physical function, role physical and bodily pain score of physical health summary reflect similar level with Cronbach's alpha reliability coefficient of 0.95, 0.84 and 0.91 Vs 0.87, 0.91 and 0.84 for hip fracture Vs chronic low back pain. Minor shortcoming for general health reflects Cronbach's alpha reliability coefficient of 0.66 Vs 0.87 making total score for physical health summary with Cronbach's alpha reliability coefficient of 0.91 Vs 0.93 for hip fracture patients and chronic low back pain respectively. (table 18)

For hip fracture patients, Cronbach's alpha coefficient for the vitality (0.64), role emotion (0.69), mental health (0.77) and social functioning score(0.61) of mental health reflect variation whereas with chronic low back pain, Cronbach's alpha coefficient for vitality (0.73), role emotion (0.94), mental health (0.83) and social functioning (0.72) has less variation. Thereby bringing total mental health summary reflect in Cronbach's alpha reliability coefficient of 0.82 Vs 0.92 for hip fracture patients and chronic low back pain respectively.(table 18)

However, overall global score of MOS SF-36 for 36-item of both hip fracture patients and chronic low back pain reflect at same pattern of Cronbach's alpha reliability coefficient of 0.91 Vs o.94 respectively.(table 18)

Table 18 Comparison of reliability test- Cronbach's alpha coefficient between MOS SF-36 V2 in Hip fracture patients at Chiangrai Hospital / Low Back Pain Patients at Srinagarind Hospital

Cronbach's alpha coefficient	Hip fracture patients at Chiangrai Hospital	Chronic low back pain patients at Srinagarind Hospital (*19*)
Physical health summary score	0.91	0.93
Physical functioning (PF)	0.95	0.87
Role physical (RP)	0.84	0.91
Bodily pain (BP)	0.91	0.84
General health (GH)	0.66	0.87
Mental health summary score	0.82	0.92
Vitality (VT)	0.64	0.73
Social functioning (SF)	0.61	0.72
Role emotion (RE)	0.69	0.94
Mental health (MH)	0.77	0.83
Global health score	0.91	0.94

4.7 MOS SF-36 Score for Hip Fracture at Chiangrai Hospital -Vs Thai Healthy Volunteer

Since there are no standard evaluation scores for SF-36, researcher employed a comparison of the SF-36 conducted by Lim et al (*48*) for Thai SF-36 health survey test of data quality, scaling, reliability and validity in healthy Thai men and women nationally . They were all healthy volunteers from different age groups ranging from 18-75 years old. To justify comparable outcomes, the investigator assumes the comparable age of Chiangrai hip fracture patients, volunteer age >55 years or older (N= 113) are employed. Moreover, a study conducted by Kongsakon et al (*47*) for Thai SF-36 health survey among Bangkok metropolitan residence (N=744) again only the age group above 55 years or older is selected for comparison.

Thai Hip fracture patients reflect very poor health-related quality of life especially in terms of physical health and mental health as noted by reduction of score by -75.4%, -61.1%, -57.8%, -58.8%, -4.1%, -43.2%,-42.2%,-4.9%, -46.6%, -32.4% and -41.2% for Physical function, Role physical, Bodily pain, General health, Vitality, Social functioning, Role emotion, Mental health, Physical health summary component, Mental health summary component and Global health as compared with national healthy Thai women and men respectively.(table 19,figure 2-3)

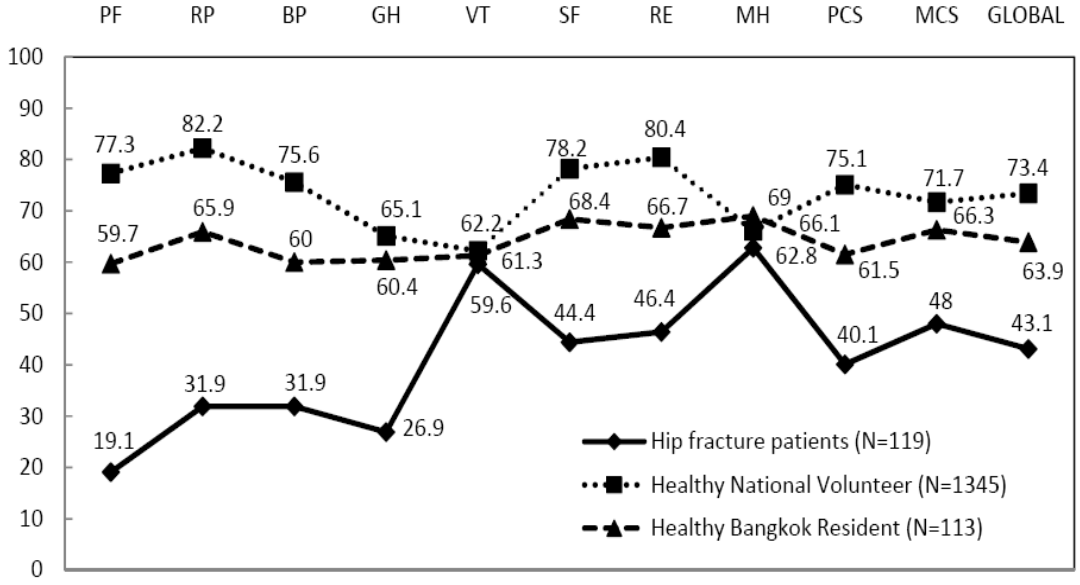
Thai Hip fracture patients reflect poor health-related quality of life especially in terms of physical health and mental health as observed by reduction of score by -67.6%, -51.5%, -46.8%, -55.4%, -2.7%, -35.0%,-30.4%,-8.9%,-34.7%, -27.6% and -32.5% for Physical function, Role physical, Bodily pain, General health, Vitality, Social functioning, Role emotion, Mental health, Physical health summary component, Mental health summary component and Global health as compared with Bangkok metropolitan residence age 55 years or older respectively.(table 19, figure 2-3)

Table 19: Comparison of MOS SF-36 scores from hip fracture patients at Chiangrai Hospital, Bangkok Residence (age ≥55 years) and National Population age 18-75,mean age 37 years)

		Mean Score (± SD) [95% CI]	
MOS SF36 - Items Scores	Hip fracture patients	Healthy Bangkok Resident, N=113	Healthy Nation Volunteer,N=13
Physical Function (PF)	19.0 (± 21.4)	58.7 (± 25.4)	77.3 (± 17.4)
	[15.1-22.8]	[53.9-63.4]	[76.3-78.2]
Role Limitation Physical (RP)	31.9 (± 14.6)	65.9 (± 38.5)	82.2 (± 28.6)
	[29.2-34.5]	[58.7-73.0]	[80.6-83.7]
Bodily pain (BP)	31.9 (± 24.4)	60.0 (± 26.6)	75.6 (± 28.4)
	[27.4-36.3]	[55.0-64.9]	[74.0-77.1]
General Health (GH)	26.9 (± 10.7)	60.4 (± 17.1)	65.1 (± 18.1)
	[24.9-28.8]	[57.2-63.5]	[64.1-62.9]
Vitality (VT)	59.6 (± 16.6)	61.3 (± 14.0)	62.2 (± 13.3)
	[65.5-62.6]	[58.6-63.9]	[77.2-79.1]
Social Function (SF)	44.4 (± 17.7)	68.4 (± 25.5)	78.2 (± 18.2)
	[41.1-47.6]	[63.6-73.1]	[78.6-82.1]
Role Limitation Emotion (RE)	46.4 (± 15.1)	66.7 (± 40.3)	80.4 (± 31.9)
	[43.6-49.1]	[59.1-74.2]	[65.4-66.7]
Mental Health (MH)	62.8 (± 16.7)	69.0 (± 15.3)	66.1 (± 12.9)
	[59.7-65.8]	[66.1-71.8]	[74.4-75.7]
Physical Component Summary	40.1 (± 11.6)	61.5 (± 14.6)	75.1 (± 12.5)
(PCS)	[37.9-42.2]	[58.7-64.2]	[70.4-71.7]
Mental Component Summary	48.0 (±10.2)	66.3 (± 12.5)	71.7 (±14.5)
(MCS)	[46.1-49.8]	[63.9-68.8]	[70.9-72.8]
Global Health	43.1 (± 10.4)	63.9 (± 23.1)	73.4 (± 25.5)
	[41.1-45.0]	[59.5-68.2]	[72.0-74.7]

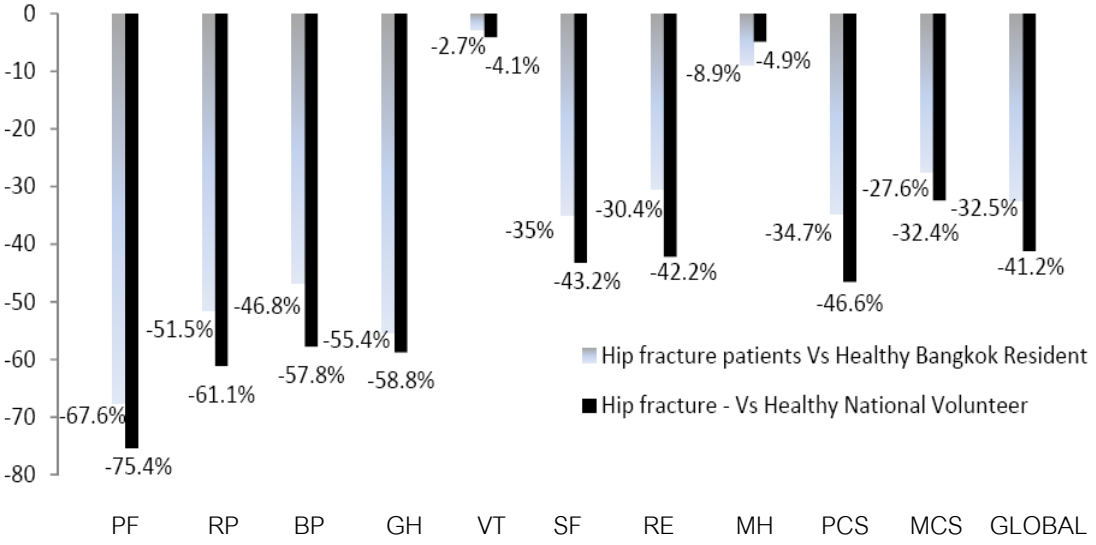
Above : A comparative diagram of MOS SF-36 Scores from Hip fracture patients Chiangrai Hospital Vs Thai Healthy Volunteer (*48*) & Bangkok Residence from table 20 (*47*)

Figure 2. A comparison of eight health dimension, domain and global health score for hip fracture with Healthy National Volunteer (mean age 37and Healthy Bangkok Resident (age≥55 years)



Above : A comparative diagram of MOS SF-36 Scores from Hip fracture patients Vs Thai Healthy Volunteer (*48*) & Bangkok Residence from table 19 (*47*)

Figure 3. A comparison of percentage deficits of eight health dimension, domain and global health score for hip fracture with Healthy National Volunteer and healthy Bangkok Resident



Above : A percentage reduction of MOS SF-36 Scores from Hip fracture patients Vs Thai Healthy Volunteer (*48*) & Bangkok Residence from table 19 (*47*)

4.8 MOS SF-36 Score for Hip Fracture Vs Some Musculoskeletal Disorders

Researcher compared the SF-36 conducted by Lertwanich P et al (*56*) for Thai SF-36 health evaluation of Thai patients suffering from sport injuries and a study conducted by Charoencholvanich K et al (*25*) for patient with after Total Knee Arthroscopy.

Thai Hip fracture patients reflect poorer health-related quality of life especially in terms of physical health and mental health as seen by reduction of score for -70.2%, -4.3%, -51.9%, -58.4%, -7.7%, 43.6%, -17.8%,-14.9%, -32.2%, -30.2% and -32.0% for Physical function, Role physical, Bodily pain, General health, Vitality, Social functioning, Role emotion, Mental health, Physical health summary component, Mental health summary component and Global health as compared with patients suffering from sport injuries respectively. (table 20, figure 4, figure 5)

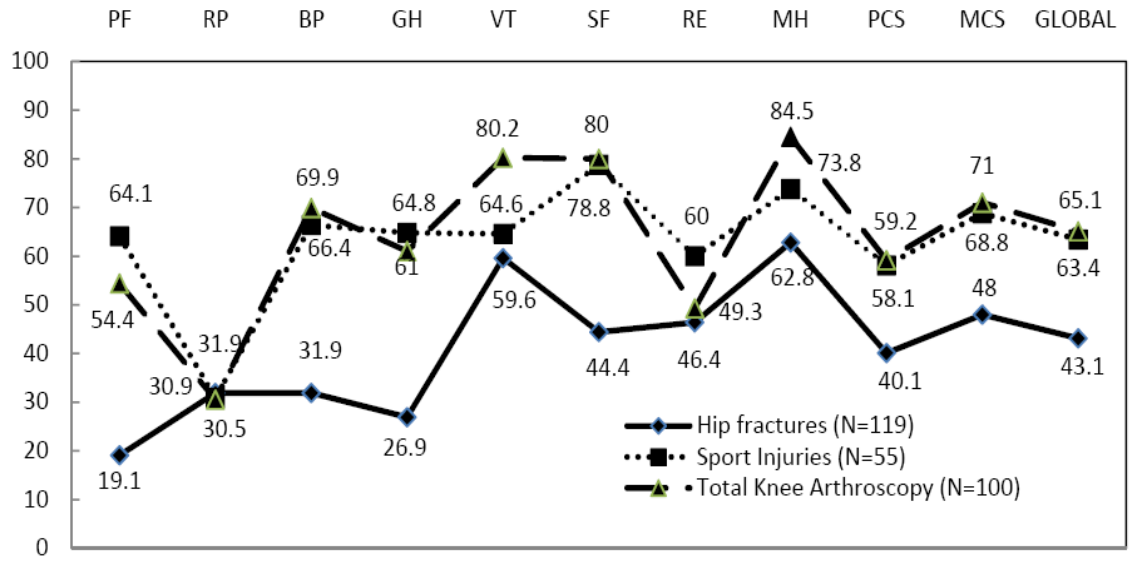
Thai Hip fracture patients reflect poor health-related quality of life especially in terms of physical health and mental health as noted by -64.8%,-1.3%, -55.8%, -55.9%, -25.6%, 44.5%, -5.8%,-25.6%,-30.9%,-32.4% and -33.7 % score reduction for Physical function, Role physical, Bodily pain, General health, Vitality, Social functioning, Role emotion, Mental health, Physical health summary component, Mental health summary component and Global health as compared with patients with Total Knee Arthroscopy respectively.(table 20, figure 4 ,figure 5)

Table 20: Comparison of MOS SF-36 scores from hip fracture patients Chiangrai Hospital, Sport injuries (mean 27.6±7.3 years & Total Knee Arthroscopy patients (mean 63.0±10.4 years)

MOS SF36 - Items Scores	Mean (± SD)		
	Hip fracture patients (n=119)	Sport injuries (n=55)	Total Knee Arthroscopy (n=100)
Physical Function (PF)	19.0 (± 21.4)	64.1 (± 14.7)	54.4 (± 23.6)
Role Limitation Physical (RP)	31.9 (± 14.6)	30.9 (± 34.0)	30.5 (± 46.0)
Bodily pain (BP)	63.0 (± 24.4)	66.4 (± 17.7)	69.9 (± 15.7)
General Health (GH)	26.9 (± 10.7)	64.8 (± 21.3)	61.0 (± 16.4)
Vitality (VT)	59.6 (± 16.6)	64.6 (± 15.0)	80.2 (± 11.0)
Social Function (SF)	44.4 (± 17.7)	78.8 (± 21.6)	80.0 (± 17.4)
Role Limitation Emotion (RE)	46.4 (± 15.1)	60.0 (± 41.3)	49.3 (± 48.8)
Mental Health (MH)	62.8 (± 16.7)	73.8 (± 15.8)	84.5 (± 11.1)
Physical Component Summary (PCS)	40.1 (± 11.6)	58.1 (± 15.3)	59.2 (± 17.5)
Mental Component Summary (MCS)	48.0 (± 10.2)	68.8 (± 18.4)	71.0 (± 14.7)
Global Health	43.1 (± 10.5)	63.4 (± 16.8)	65.1 (± 16.1)

Figure 4

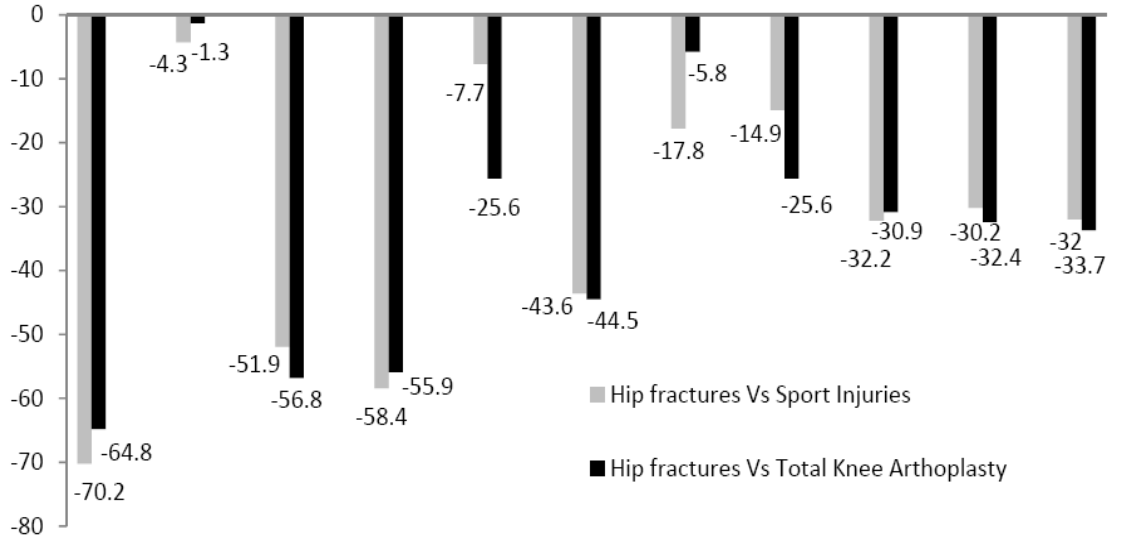
A comparison diagram of MOS SF-36 scores from hip fracture, sport injury and total knee arthroscopy



Above: A comparison diagram of MOS SF-36 scores from hip fracture patients at Chiangr Hospital, Sport injuries patient(mean 27.6 years)(*56*)&Total Knee Arthroscopy patient(age 3 85 years)(*25*)

Figure 5

Percentage reduction of MOS SF-36 scores of hip fracture, sport Injury and total knee arthroscopy from above



Above : A percentage reduction of MOS SF-36 Score of Hip fracture Vs Patients suffering frc Sport Injuries (*56*) & patients with Total Knee Arthroscopy from figure 3 (*25*)

PF RP BP GH VT SF RE MH PCS MCS GLOBAL

4.9 MOS SF-36 Score for Hip Fracture Vs Some Neurological Disorders

Researcher also investigated for the purpose of comparison the SF-36 conducted by Singhpoo K et al (*57*) for Thai SF-36 health evaluation of Thai patients suffering from stroke (N= 84) and a study conducted by Tiamkao S et al (*58*) for patient with diagnosed Epilepsy (N=100)

Thai Hip fracture patients reflect poorer health-related quality of life especially in terms of physical health and mental health as noted by reduction of score by -70.9%, -50.5%, -52.3%, -55.1%, -1.0%, -33.3%,-31.7%,-7.6%, -36.7%, -25.9% and -32.7% for Physical function, Role physical, Bodily pain, General health, Vitality, Social functioning, Role emotion, Mental health, Physical health summary component, Mental health summary component and Global health as compared with patients suffering from stroke respectively.(table 21,figure 6 ,figure 7)

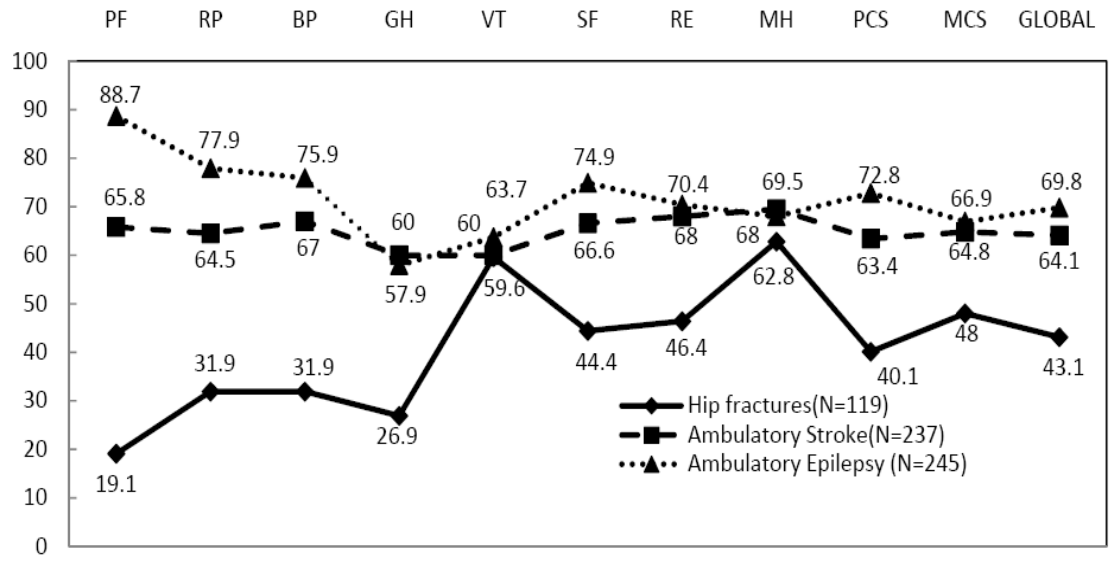
Thai Hip fracture patients reflect poorer health-related quality of life especially in terms of physical health and mental health as noted by reduction of score by -78.4%,-59.0%, -57.9%, -55.1%, -6.4%,-40.7%, -34%,-9.6%,-44.9%,-28.2% and -38.2 %for Physical function, Role physical, Bodily pain, General health, Vitality, Social functioning, Role emotion, Mental health, Physical health summary component, Mental health summary component and Global health as compared with patients with epilepsy respectively. (table 21, figure 6, figure 7)

Table 21: Comparison of MOS SF-36 scores from hip fracture patients at Chiangrai Hospital, Ambulatory Stroke patients (mean 64.0±12.8 years) & Epilepsy patients (mean 32.3± 13.2 years)

MOS SF36 - Items Scores	Mean (± SD)		
	Hip fracture patients (n=119)	Ambulatory Stroke (n=237)	Ambulatory Epilepsy (n=245)
Physical Function (PF)	19.0 (± 21.4)	65.8 (± 28.6)	88.7 (± 13.7)
Role Limitation Physical (RP)	31.9 (± 14.6)	64.5 (± 22.5)	77.9 (± 33.4)
Bodily pain (BP)	63.0 (± 24.4)	67.0 (± 26.2)	75.9 (± 21.1)
General Health (GH)	26.9 (± 10.7)	60.0 (± 23.2)	57.9 (± 22.1)
Vitality (VT)	59.6 (± 16.6)	60.0 (± 25.0)	63.7 (± 20.2)
Social Function (SF)	44.4 (± 17.7)	66.6 (± 26.0)	74.9 (± 22.3)
Role Limitation Emotion (RE)	46.4 (± 15.1)	68.0 (± 24.0)	70.4 (± 38.0)
Mental Health (MH)	62.8 (± 16.7)	69.5 (± 22.0)	68.0 (± 18.1)
Physical Component Summary (PCS)	40.1 (± 11.6)	63.4 (± 25.1)	72.8 (± 22.5)
Mental Component Summary (MCS)	48.0 (± 10.2)	64.8 (± 24.6)	66.9 (± 24.6)
Global Health	43.1 (± 10.5)	64.1 (± 24.8)	69.8 (± 23.5)

Figure 6

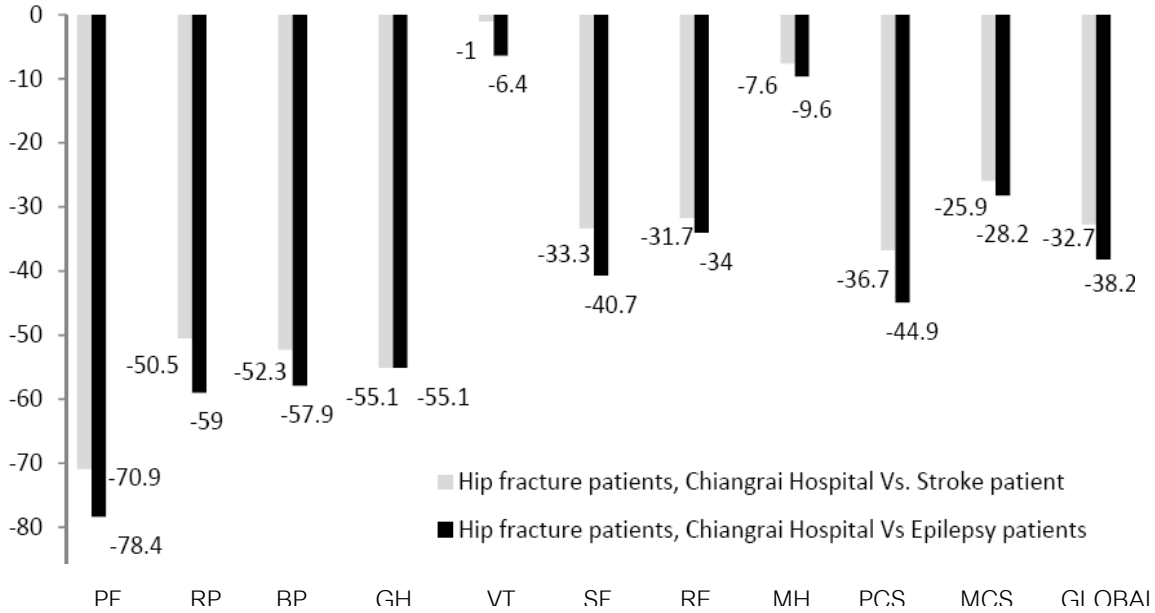
A comparison diagram of MOS SF-36 scores from hip fracture, ambulatory Stroke and Epilepsy



Above : A comparison diagram of MOS SF-36 scores from hip fracture, Ambulatory Stroke (mean 64.0±12.8 years) (*57*)&Ambulatory Epilepsy(mean 32.3±13.2 years)(*58*)

Figure 7

Percentage reduction of MOS SF-36 Scores of Hip fracture, Stroke and Epilepsy from figure 5



Above : A percentage reduction of MOS SF-36 Scores of Hip fracture Vs Patients suffering from Stroke (*57*) & patients with Epilepsy from figure 5 (*58*)

CHAPTER V

DISCUSSION AND CONCLUSION

5.1 DISCUSSION

The present study shows that health-related quality of life as measured by Medical Outcomes Study, a 36-item Short Form Health Survey (MOS SF-36) Thai version 2 is reliable. The reliability is comparable to results firstly tested by Jirarattanaphochai K et al (*18*) given in table 11. The Cronbach's alpha coefficient for Global health score for hip fracture is 0.91 whereas 0.94 for chronic low back pain which is comparable. Moreover, the eight health dimensions and physical and mental summary score are not significantly different except minor shortcoming for role emotion between patient rated and proxy rated as result. Therefore the MOS SF-36 is a reliable tool for post-discharge mail respond monitoring. When looking at Cronbach's alpha coefficient for Physical health summary score and Mental health summary score for hip fracture of 0.91 and 0.82 against 0.93 and 0.83 for chronic low back pain. These results for hip fracture are comparatively reliable, all of which achieved Cronbach's alpha coefficient above 0.7 however, there are differences in the scoring approach since MOS SF-36 from chronic low back pain taking into accounts only four symptoms health dimensions for Physical summary score (Physical function, PF; Role physical, RP; Bodily pain, BP and General health, GH) and for Mental summary score (Vitality, VT; Social functioning, SF; Role emotion, RE; and Mental health, MH). Whereas the MOS SF-36 from hip fracture are combined into five symptom dimensions by adding also Vitality, VT into the Physical summary and adding General health into Mental summary score. The investigator believes that, both Vitality and General health should be part of both domains health and is therefore indispensable. Moreover, scoring with five dimensions is somewhat more reliable than four dimensions. In addition, overall score for 36 items had asserted the reliability of the test and these results in terms of reliability are also shown in table 5 between original PCS and MCS and the adapted PCS and MCS proposed by investigator.

Moreover, the reliability test from hip fracture patients were mostly reported by patients' proxy (76 patients out of 119). The reflected in physical summary is more evidence than that of mental summary however, only the score for Role emotion is significantly different as shown in table 6. The shortcoming is probably due to the fact that these hip fracture are very old with age ranging from 50 to 104 years old at the average of 74 years old. However, there is a more positive aspect as follows:

1. Since the response of the MOS SF-36 is blinded between responder, data collector and researcher due to the research approach separately in 3 stages. Therefore the type of mail responded which could probably reflect an actual pragmatic trials where rater are blinded with the investigator and whereas the rater from Jirarattanaphochai K et al (*18*) was conducted during the inclusion-exclusion period and patients are subjected to further physical examination which may undermine by psychological bias. Ware, JH and Hamel MB (*72*) had earlier remarked in their perspectives published recently that although the randomized clinical trials provide essential high-quality evidence about the benefits and harms of medical interventions. There are shortcomings that many such trials may have limited relevance to clinical practice. This research by investigator reflected the reality whereby home rehabilitation is the final aims for all hip fracture to regain physical and mental health as well as to reduce hospital burden in the long-term health care cost.

2. Patients as well as care takers of patients especially very old hip fracture patients with limited physical functions such as but are under home rehabilitation may be partly compensated by better mental functions and such are very pragmatic no matter what the rating are from patient's point of view through proxy or from patients themselves. The investigator believes that patients rating the scale before physical examination may be different and intentionally rated as compared with patients rated at their own residence.

3. Overall the Cronbach's alpha coefficient of global health scores for all 36 items and of 8 health dimensions for the hip fracture are almost comparable with that of chronic low back pain, thus there is reason to justify that adding both General health and Vitality into both of the domain summary score. The attempt also has been remarked recently by Suzukamo Y et al (*53*) to separate 2 domain summary of Physical component summary(PCS) , mental component summary (MCS) into 3 domains summary PCS, MCS and Role component summary (RCS) reflected better test in terms of goodness-of-fit in Japanese translation of SF-36. As such, adaptation for the cultural aspect for interpreting the reliability of the MOS SF-36 is worthy of reconsideration. However, after readjustment of the MOS SF-36 score from the findings after hip fracture patient at Chiangrai Hospital, the adjustment as suggested by investigator bring better results in terms of Cronbach's alpha coefficient as shown in table 19.

Even though the major significant difference in terms of physical and mental health as well as other aspect can be differentiated from a single test as given in table 15 and table 16.

An attempt to pair each individual hip fracture patient into some d clinical and socio-demographic characteristics looking at both dimensions for physical and mental health component score summary for each individual. Though the results could not be definitely deciphered due to small sample size, these results need further study, may be reflected as follow:

1. Men are more likely to have better physical health as compared with women. (Table 15)

2. Age lower than 65 years old are more likely to have better physical health.(Table 15)

3. BMI over 20 Kg/m2 are more likely to have better physical health. (Table 15)

4. There is no difference in terms of physical-mental health pair for both surgical and non-surgical management. (Table 16)

5. Femoral neck fracture patients are more likely to have better physical health as compared with mental health whereas the intertrochanteric fracture tend to have poor mental health. (Table 16)

6. Hip fracture patients with comorbid diseases tended to have poorer both physical and mental health as compare with the same without comorbid disease (Table 16)

Figure 8.

Separation of Physical-Mental Health Pair

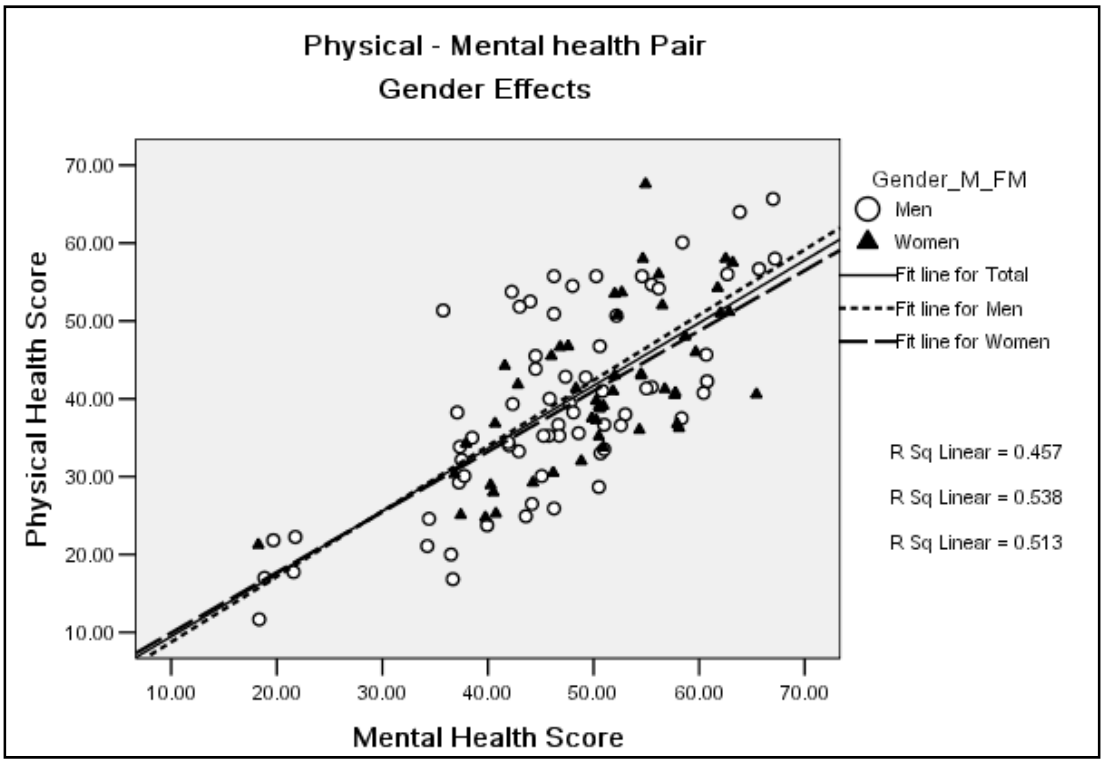


Figure 9.

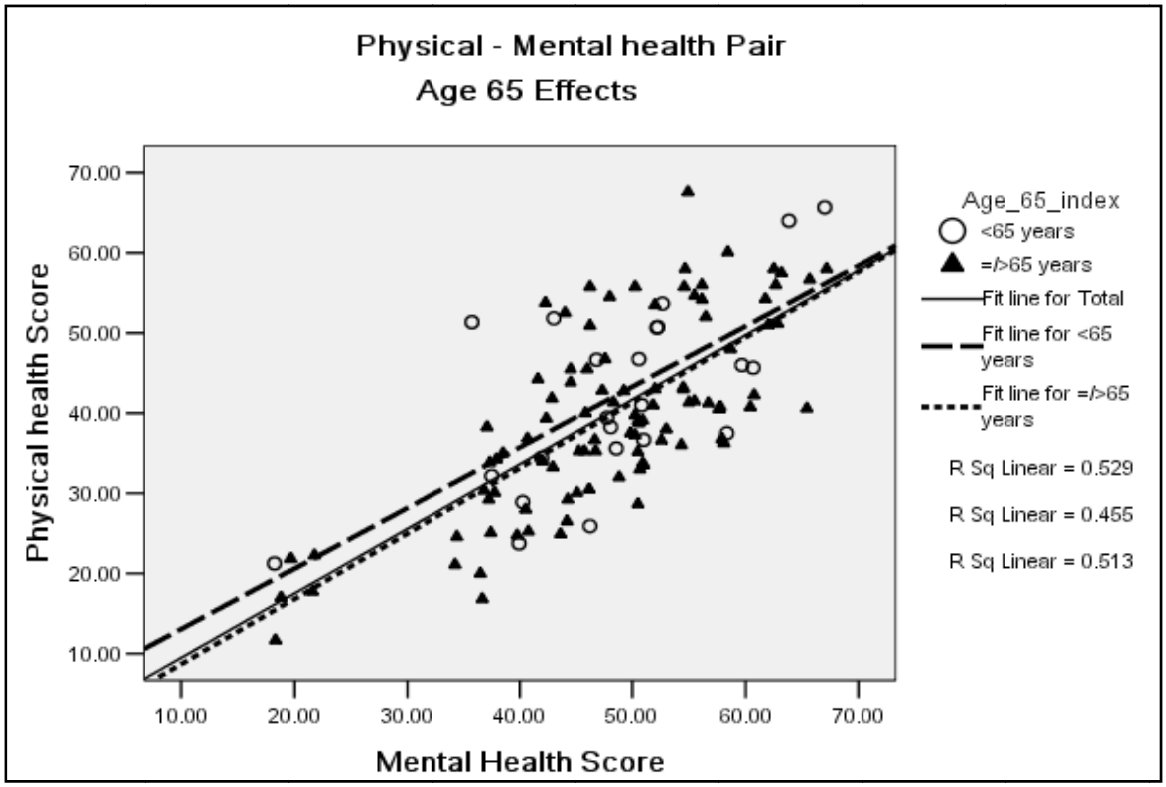


Figure 10

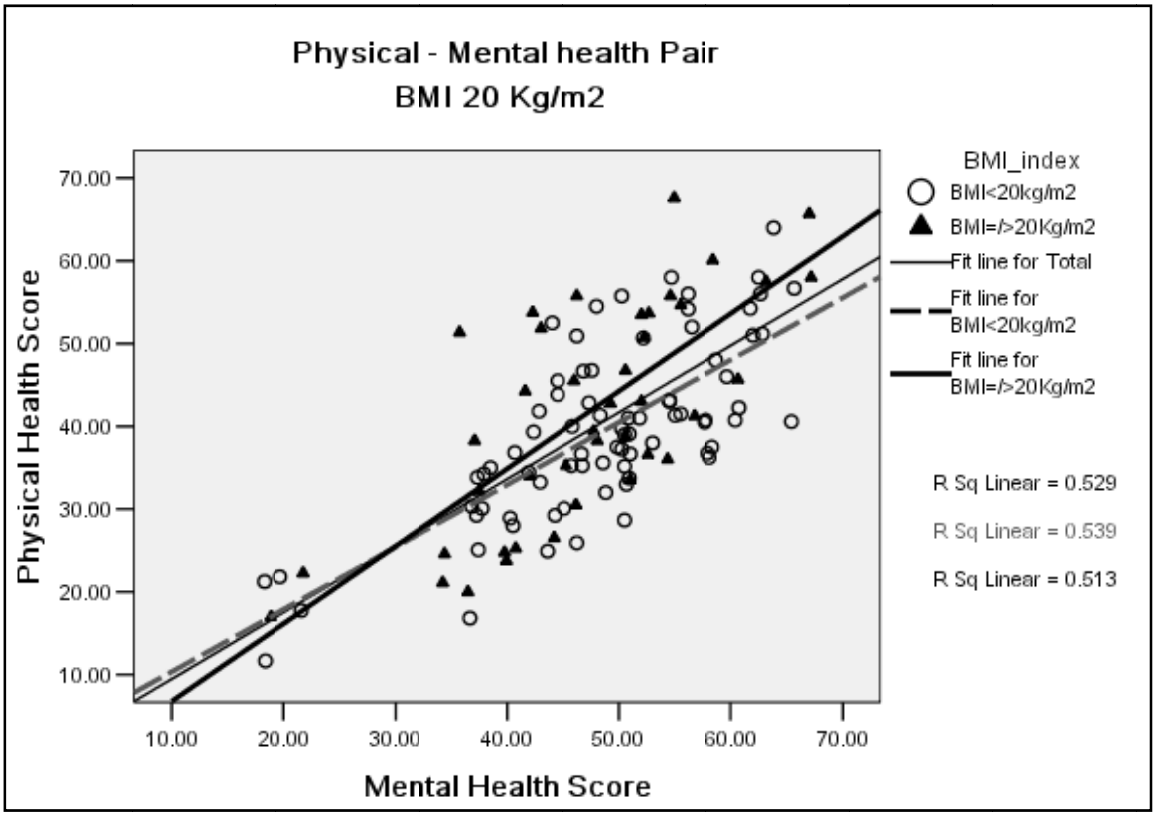


Figure 11

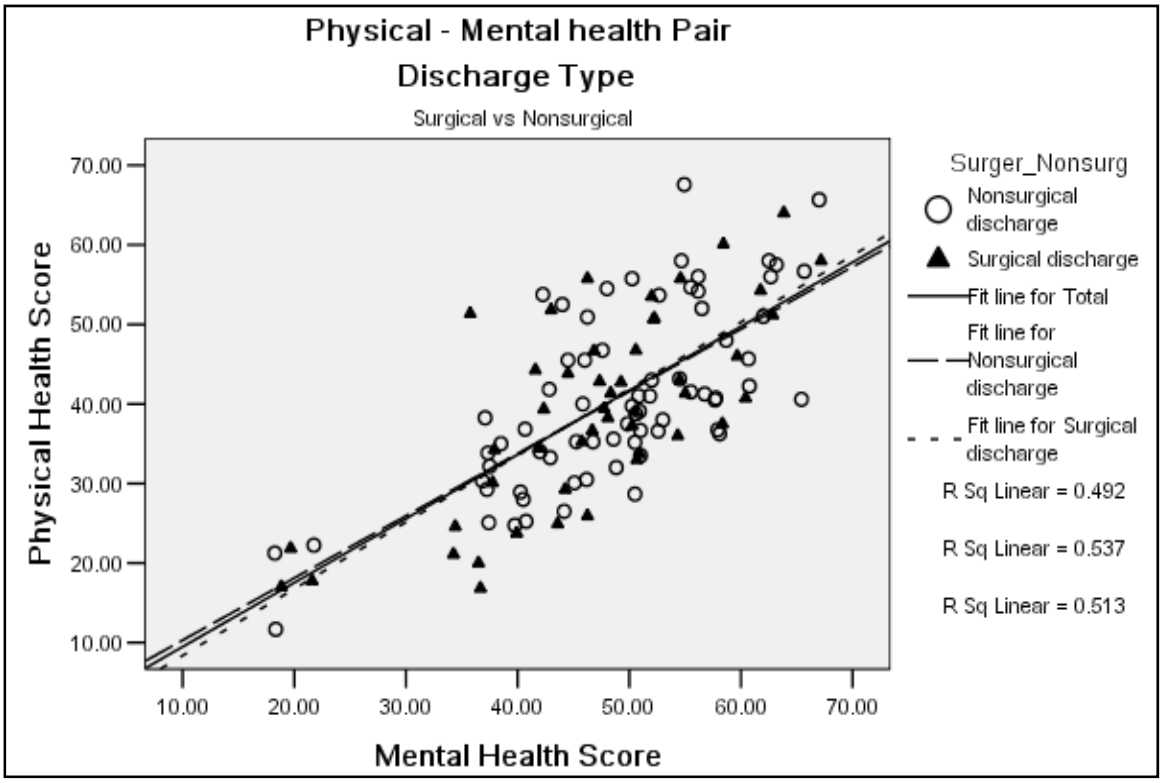


Figure 12

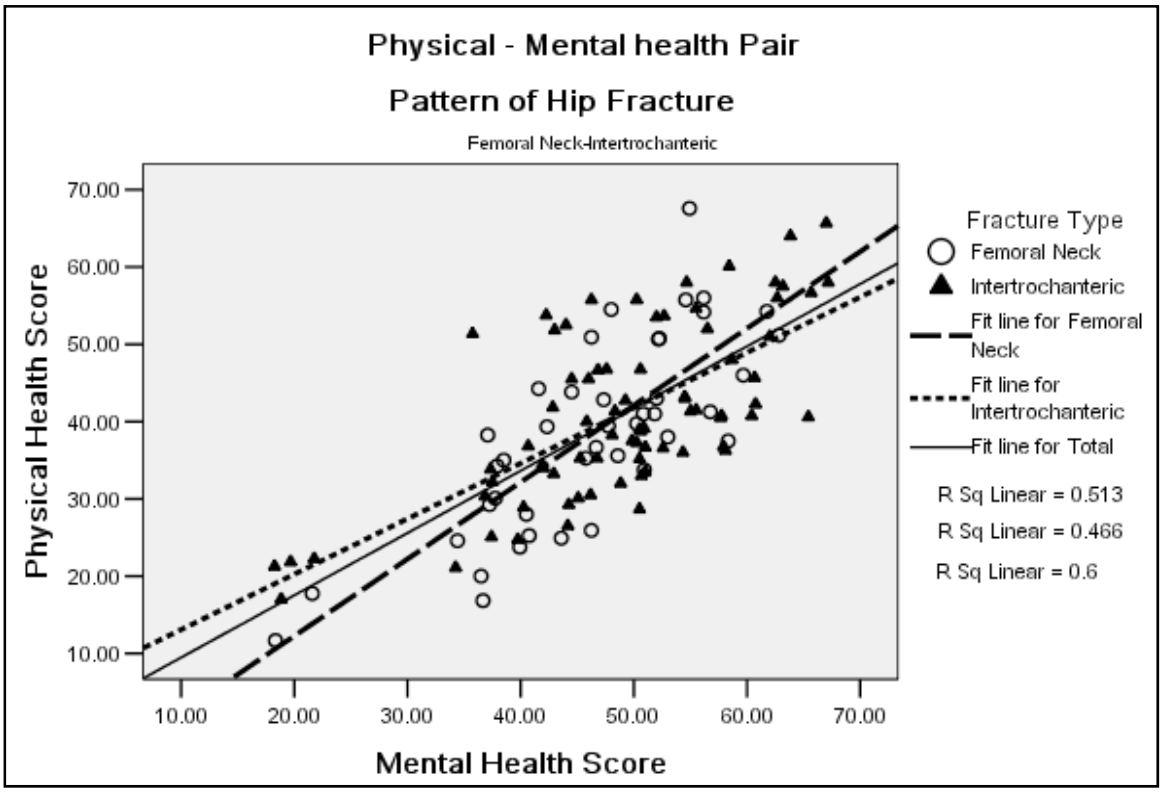
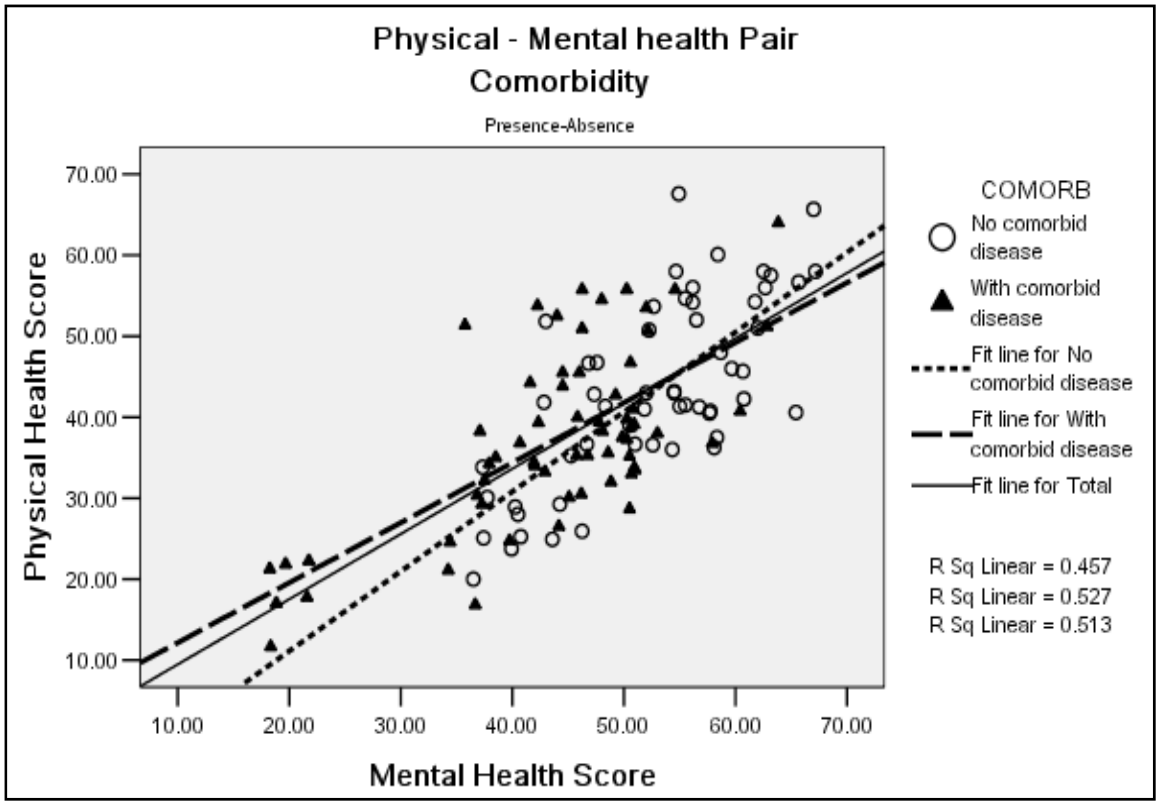


Figure 13



Considering the overall results of MOS SF-36 scores in each of different health dimension (table 18) as compared with healthy volunteers in all aspects, as above form the study, it is worth mentioning in perspective the following:

Hip fracture patients from Chiangrai Hospital suffered the most in terms of poor physical functions with the score of 19.0 (± 21.4) affecting their general health with the score of 26.9 (± 10.7). The hip fracture patients had very limited role limitation for physical function 31.9 (± 14.6) and role limiting for emotional function 46.4(±15.1) as compared to both healthy volunteer in Bangkok and nationally. Moreover, social function 44.4(± 17.7) and bodily pain 31.9 (± 24.4) are also factors contributing to the overall global health with total global health score as low as 43.1 (± 10.5) as compared to Bangkok residence of 63.9 (± NA) and national healthy volunteer of 73.4 (± NA). The global health of hip fracture patients also reflected the similar lower health score for both physical health of 40.1 (± 11.6) and mental health of 48.0 (± 10.2), however, mental health seems to be better as compared with physical health. These reflected similar

score trends for comparison both with healthy volunteer (table 19, Figure 8 - 9) with other musculoskeletal disorders such as sport injuries and total knee arthroscopy (table 20, figure 10 - 11) and neurological disorder such as stroke and epilepsy.(table 21, figure 12 - 13.)

From earlier investigations where investigator are able to obtain cost studies from Srisawai K et al (77), another investigator in Chiangrai Hospital, they analyzed 121 hip fracture patients with one year follow-up looking at direct hospital cost in terms of healthcare resource utilization. These health care resources were classed as a) operational cost, b) all drugs cost, c) all medical equipment-supplies-disposable cost, d) room-service and hospital fee charge and e) X-ray/Lab test charge and f)other cost. They found that overall hip fracture patients analyzed, patients with surgical management consumed significantly higher health care resource utilization cost as reflected in one year direct hospital cost as compared with nonsurgical management.

Among these, 67 hip fracture patients whom had been discharge at home rehabilitation, over one year. The responding MOS SF-36 had been analyzed looking at correlation with one year direct hospital cost. The correlation coefficient of both outcomes are given in table 22

Table 22 Correlation of one year hospital direct cost and physical health summary mental health summary and global health summary score

MOS SF-36 Health Domain Score		
	Correlation coefficient	*p-value
Physical health summary(PCS)	- 0.071	0.567
Mental health summary(MCS)	- 0.114	0.357
Global score(GBH)	- 0.154	0.214

* p-value by Spearman correlation test at the 0.01 level (2-tailed)

Investigator further analyzed cost-quality of life outcomes given in pairs of individual patients between one year direct hospital cost (in THB) and global health (in score) for selected study variables such as gender, pattern of fracture and comorbidity. These results are illustrated in figure 14 - 16. Analysis of correlation results from table 22 suggested that there are no correlation between all physical health, mental health and global health with one-year direct hospital cost. Moreover, when further analysis for individual pairs between global health score and one year direct hospital cost separately between gender, monthly income level, pattern of fracture and comorbidity also reflected similar finding from table 22 that there are no correlation between one year direct hospital cost and global health quality of life outcome.

Moreover, the healthy status of individuals and quality of life status per se needs definitive interpretation. Consideration of healthcare resource consumption and relevance prevention of morbidity and subsequent reduction of hospital mortality after hip fracture should be carried out as a whole. Interdisciplinary intervention program for older hip fracture proposed reported by Shyu YIL et al (61) had at least shed light as another good alternative for elderly hip fracture patients. The interdisciplinary intervention program involved healthcare profession individual to get involved with older hip fracture once admitted in the hospital. This interdisciplinary intervention had proven better patients-reported outcomes in terms of quality of life even after discharge for home rehabilitation. The last but not least, investigator would like to bring in an encouraging outcomes which should be reserved for further consideration for better healthcare management for elderly Thai hip fracture patients. Despite eminent physical health deficits, the additional reflect from proxy's notes apart from a mail responded of a proxy of patient age 104 years old are detailed in an Appendix H. In shorts, an excellent home rehabilitation in a family setting is a part of overall healthcare management for better outcomes. Should we anticipate for better outcomes for hip fracture patient?

Figure 14.Global health and one- year direct hospital cost separation by gender

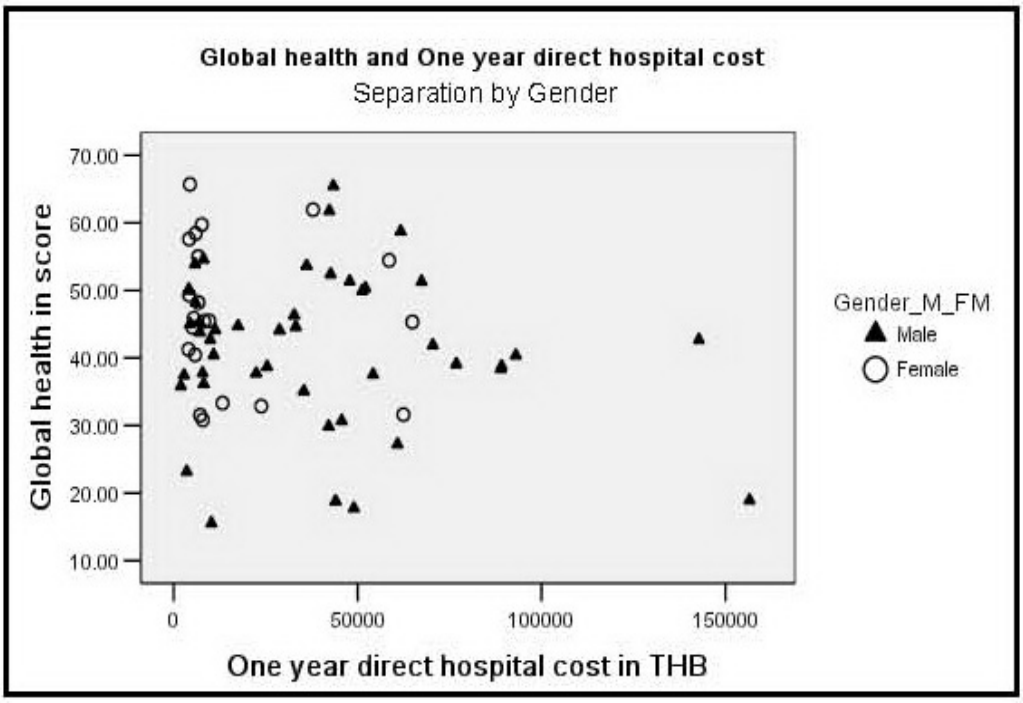


Figure 15.Global health and one- year direct hospital cost repartition by pattern of fracture

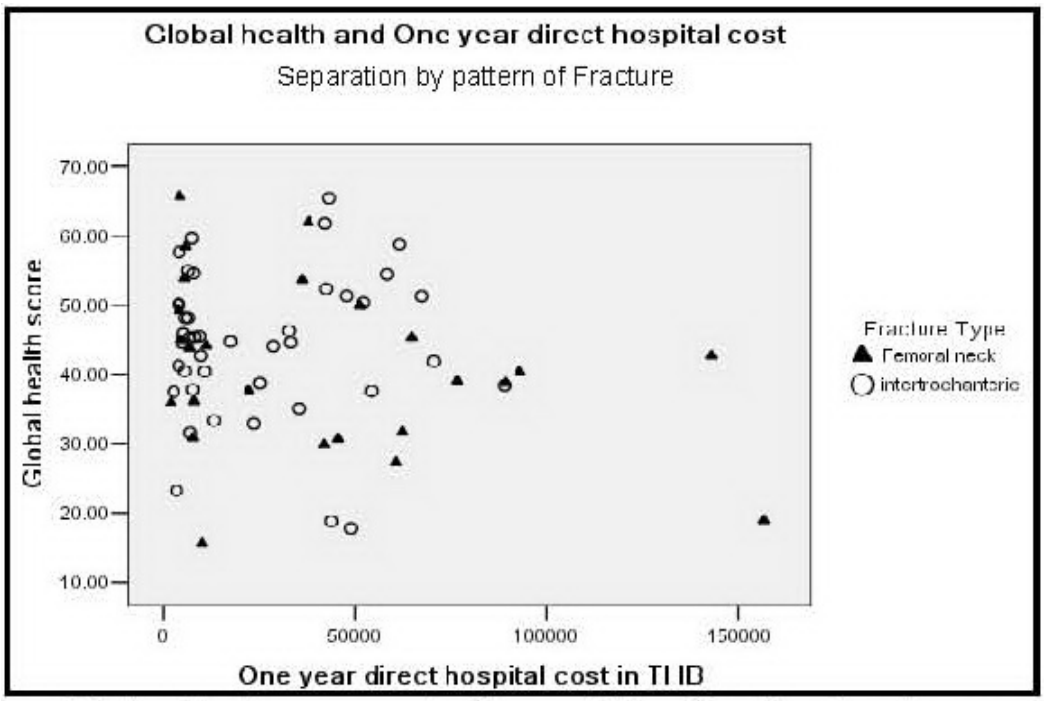
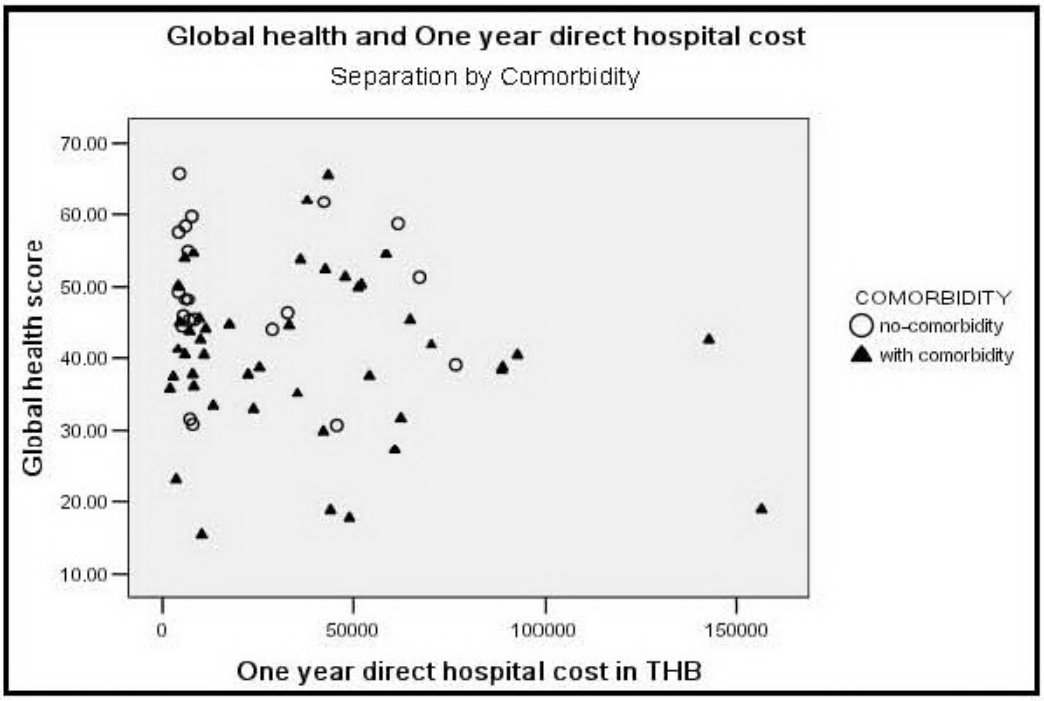


Figure 16.Global health and one- year direct hospital cost separation by comorbidity



As above, the MOS SF-36 Thai version2 validated by Jirarattanaphochai K et al (*16*) is a very useful instrument to assess health-related quality of life for Thai hip fracture patients at Chiangrai Hospital due to the following rationale.

1. The MOS SF-36 is very sensitive to physical functions impairment and is suitable for chronic disease such as hip fracture, moreover the reliability test confirmed Cronbach's alpha coefficient ranging from 0.7 to 0.9 at most of the health dimensions and is especially very consistent for physical , mental and global health. The results are consistent between patient self-rated and proxy-rated.

2. Hip fracture patients reflected poorer physical health especially in terms of physical function leading to subsequence physical and mental deterioration as compared with healthy individual, these results are similar even when compared with musculoskeletal disease and neurological disease. The physical health domain (PCS) deficits could lead to over 50-70 % reduction of the score point as compared with healthy person. Hip fracture ranks the most physically impairment resulted over 26-42 % reduction for

physical health score as compared with other disease. The mental health domain (MCS) is less deficits as compared with physical health.

3. Health-related quality of life for Thai hip fracture patients, observed from this finding largely varied among individual patients for individual health symptoms dimensions even though the summary score for both physical and mental domain are less varied. This observation may probably justify due to following reasons.

3.1 There is a need to specifically account for epidemiologic aspects of hip fracture (e.g, the relative incidence of osteoporosis, falls, fractures, and repeat fractures in particular subgroups). Such that patients-reported outcome shall be more reliable.

3.2 There is a need to ascertain preliminary health status and quality of life aspects for both the illness itself and different treatment options for the elderly people. Since these are still largely difference in per-person use of service, healthcare resource availability provided by hospital and patients' characteristics. Such that, should a prospective longitudinal study as early as the first fracture incidence be considered, thereby the MOS SF-36 monitoring of the outcome is useful.

5.2 CONCLUSION

This study has explored the health-related quality of life for Thai hip fracture patients in clinical practice settings where selected socio-demographic and clinical characteristics were taken into account. There were119 patients participating in this study age ranging from 50 -104 years old with mean age 74 years old. The health related quality of life employed the Medical Outcomes Study 36-item Short Form Survey MOS SF-36 Thai version 2. The self-assessments were both self-rated by patients and proxy after patients had been discharged for over 6-months and being at home for their individual rehabilitation. The MOS SF-36 is a highly reliable instrument and reflected

consistent between patient-rated and proxy rated with overall Cronbach's alpha coefficient exceeding 0.91 for global health score.

Overall, these elderly hip fracture patients significantly revealed poor health-related quality of life reflected by the mean score (SD) for physical health summary score component, mental health summary score component and global health score at 40.1 (±11.6), 48.0 (±10.2) and 43.1 (±10.5) respectively. In comparison with healthy volunteers, hip fracture patients had deficits scores for physical health from -35% to -47%, for mental health from -28% to -32 % and for overall global health from -32% to -41%. Despite some limitations and obstacles, after adjusting with various socio-demographic and clinical characteristics factors, the study reassured 95%CI with significant level at $p<0.05$ that the presence of comorbidities explained the impact of health-related quality of life for elderly Thai hip fracture patients.

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APPENDICES

APPENDIX A

แบบแสดงความยินดีเข้าร่วมการวิจัย

ส่วนที่ 1 คำชี้แจง ข้อมูลและคำอธิบายสาหรับผู้มีส่วนร่วมในการวิจัย

ในเอกสารนี้อาจมีข้อความที่ท่านอ่านแล้วยังไม่เข้าใจ โปรดสอบถามหัวหน้าโครงการวิจัยหรือผู้แทนให้ช่วยอธิบายจนกว่าจะเข้าใจดี ท่านอาจจะขอเอกสารนี้กลับไปอ่านที่บ้านเพื่อปรึกษาหารือกับญาติพี่น้อง เพื่อนสนิท หรือ แพทย์ประจำตัวของท่านเพื่อช่วยในการตัดสินใจเข้าร่วมการวิจัย

ชื่อโครงการวิจัย คุณภาพชีวิตผู้ป่วยกระดูกสะโพกหัก ประเมินด้วยแบบสอบถามคุณภาพชีวิตชนิดเอสเอฟ -36 ฉบับภาษาไทยรุ่นที่ 2

ผู้สนับสนุนการวิจัย โครงการวิจัยบัณฑิตศึกษา หน่วยระบาดวิทยาคลีนิก คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

ผู้ทำวิจัย

ชื่อ เภสัชกร อนันต์ อุดมพรประภา ที่อยู่ เลขที่. 185/45, โรงเรียนนานาชาติฮาร์โรว์กรุงเทพ , โกสุมรวมใจ ซอย 14 แขวงทุ่งสีกัน เขต ดอนเมือง กรุงเทพ 10210 เบอร์โทรศัพท์ 089 129 6285

ผู้ร่วมในโครงการวิจัย

ชื่อ (1) นางแจ่มจิตต์ เทพนามวงศ์ ตำแหน่งพยาบาลวิชาชีพ ปฏิบัติงานที่หอผู้ป่วยออร์โธปิดิกส์ โรงพยาบาลเชียงรายประชานุเคราะห์ โดยความอนุเคราะห์ของ นายแพทย์ ประกัน สุขวงศ์ หัวหน้าหน่วยศัลยกรรมกระดูก โทรศัพท์ 053 – 711 009 ต่อ 1116) (ที่ทำงานและมือถือ) 081-671 4057

เรียน ผู้เข้าร่วมโครงการวิจัยทุกท่าน

ท่านได้รับเชิญให้เข้าร่วมในโครงการวิจัยนี้เนื่องจากท่านเป็นผู้ป่วยกระดูกสะโพกหัก ก่อนที่ท่านจะตัดสินใจเข้าร่วมในการศึกษาวิจัยดังกล่าว ขอให้ท่านอ่านเอกสารฉบับนี้อย่างถี่ถ้วน เพื่อให้ท่านได้ทราบถึงเหตุผลและรายละเอียดของการศึกษาวิจัยในครั้งนี้ หากท่านมีข้อสงสัยใดๆ เพิ่มเติม กรุณาซักถามจากเจ้าหน้าที่ประจำงานวิจัย ซึ่งจะเป็นผู้ให้ความกระจ่างแก่ท่านได้ ท่านสามารถขอคำแนะนำในการเข้าร่วมโครงการวิจัยนี้จากครอบครัว ของท่านในการตัดสินใจโดยอิสระ ถ้าท่านตัดสินใจแล้วว่าจะเข้าร่วมในโครงการวิจัยนี้ ขอให้ท่านลงนามในเอกสารแสดงความยินยอมนี้

เหตุผลความเป็นมา

โรคกระดูกสะโพกหักทำให้คุณภาพชีวิตของผู้ป่วยลดลงและมีอันตรายต่อเนื่อง ซึ่งสามารถทำให้เกิดการพิการได้ การรักษาภาวะกระดูกสะโพกหักมีหลากหลายแนวทาง ขึ้นกับสภาพร่างกายผู้ป่วยและความเหมาะสม ปัจจุบันการรักษาเหล่านี้มีวัตถุประสงค์หลัก เพื่อช่วยให้ผู้ป่วยมีสุขภาพที่ดีขึ้นและลดความทรมานจากภาวะกระดูกสะโพกหัก การประเมินคุณภาพชีวิตด้วยแบบสอบถามคุณภาพชีวิตชนิดเอสเอฟ-36ฉบับภาษาไทยรุ่นที่2 เป็นการศึกษาที่ทำให้แพทย์และผู้รักษาโรคกระดูกสะโพกหัก สามารถนำไปพิจารณาเพื่อให้แพทย์ได้ทราบถึงผลการรักษา ที่ท่านได้รับ

วัตถุประสงค์ของการศึกษา

เพื่อศึกษาคุณภาพชีวิตที่เกี่ยวเนื่องกับสุขภาวะสำหรับผู้ป่วยกระดูกสะโพกหัก. จำนวนผู้เข้าร่วมในโครงการวิจัย คือ 130 คน

วิธีการที่เกี่ยวข้องกับการวิจัย

หลังจากท่านให้ความยินยอมที่จะเข้าร่วมในโครงการวิจัยนี้

1. ผู้วิจัยจะขอตรวจรายละเอียดเกี่ยวกับข้อมูลประวัติจากท่านเพื่อคัดกรองว่าท่านมีคุณสมบัติที่เหมาะสมที่จะเข้าร่วมในการวิจัยนี้
2. หากท่านมีคุณสมบัติตามเกณฑ์คัดเข้า

2.1) ผู้วิจัยมีความประสงค์ให้ท่านประเมินแบบสอบถามคุณภาพชีวิตก่อนเข้าร่วมโครงการวิจัยนี้ <u>ท่านจำเป็นต้องให้ข้อมูลในการประเมินแบบสอบถามคุณภาพชีวิตจำนวนทั้งสิ้น 1 ครั้ง</u>

2.2) การวิจัยนี้ไม่มีการใช้ยา และไม่มีการตรวจร่างกายแต่อย่างใด แต่เป็นการประเมินด้วยแบบสอบถามที่ได้เตรียมมาพร้อมกันนี้และแบบสอบถามที่ส่งทางไปรษณีย์ลงทะเบียนถึงท่านโดยตรงตามที่อยู่ที่ท่านได้ให้ไว้พร้อมกันนี้

ความเสี่ยงที่อาจได้รับ

เนื่องจากเป็นการศึกษาโดยตอบแบบสอบถามเพียงครั้งเดียว และท่านจะไดรับการรักษา ต่อเนื่องตามเวชปฏิบัติปกติ โดยไม่มีการทดสอบหรือการรักษาพิเศษ จึงไม่คาดว่าจะมีเหตุการณ์ไม่พึงประสงค์เกิดจากการเข้าร่วมในการวิจัยนี้ นอกจากทำให้ท่านไม่สะดวกจากการเสียเวลาเล็กน้อย

ประโยชน์ที่อาจได้รับ

การเข้าร่วมในโครงการวิจัยนี้ท่านอาจจะไม่ได้ประโยชน์โดยตรง แต่ผลของการวิจัยจะนำไปสู่การศึกษาเข้าใจในด้านคุณภาพชีวิตที่เกี่ยวกับสุขภาวะผู้ป่วยโรคกระดูกสะโพกหักได้ดียิ่งขึ้น

ข้อปฏิบัติของท่านขณะที่ร่วมในโครงการวิจัย

ขอให้ท่านให้ข้อมูลทางการแพทย์ของท่านทั้งในอดีต และปัจจุบัน แก่ผู้ทำวิจัยด้วยความสัตย์จริง

อันตรายที่อาจเกิดขึ้นจากการเข้าร่วมในโครงการวิจัยและความรับผิดชอบของผู้ทำวิจัย/ผู้สนับสนุนการวิจัย

การลงนามในเอกสารให้ความยินยอม ไม่ได้หมายความว่าท่านได้สละสิทธิ์ทางกฎหมายตามปกติที่ท่านพึงมีในกรณีที่ท่านได้รับอันตรายใด ๆ หรือต้องการข้อมูลเพิ่มเติมที่เกี่ยวข้องกับโครงการวิจัย ท่านสามารถติดต่อกับหัวหน้าโครงการวิจัยหรือเจ้าหน้าที่ผู้แทนผู้ทำวิจัย ได้ตลอด 24 ชั่วโมง

ค่าใช้จ่ายของท่านในการเข้าร่วมการวิจัย ไม่มี

ค่าตอบแทนสำหรับผู้เข้าร่วมวิจัย ท่านจะไม่ได้รับค่าตอบแทนจากการเข้าร่วมการศึกษานี้

การเข้าร่วมและการสิ้นสุดการเข้าร่วมโครงการวิจัย

การเข้าร่วมในโครงการวิจัยครั้งนี้เป็นไปโดยความสมัครใจ หากท่านไม่สมัครใจจะเข้าร่วมการศึกษาแล้ว ท่านสามารถถอนตัวได้ตลอดเวลา การขอถอนตัวออกจากโครงการวิจัยจะไม่มีผลต่อการดูแลรักษาโรคของท่านแต่อย่างใด

การปกป้องรักษาข้อมูลความลับของท่าน

ข้อมูลที่อาจนำไปสู่การเปิดเผยตัวท่าน จะได้รับการปกปิดและจะไม่เปิดเผยแก่สาธารณชน ในกรณีที่ผลการวิจัยได้รับการตีพิมพ์ ชื่อและที่อยู่ของท่านจะต้องได้รับการปกปิดอยู่เสมอ โดยจะใช้เฉพาะรหัสประจำโครงการวิจัยของท่าน หากท่านขอยกเลิกการให้คำยินยอมหลังจากที่ท่านได้เข้าร่วมโครงการวิจัยแล้ว ข้อมูลส่วนตัวของท่านจะไม่ถูกบันทึกเพิ่มเติม อย่างไรก็ตามข้อมูลอื่นๆ ของท่านอาจถูกนำมาใช้เพื่อประเมินผลการวิจัย และท่านจะไม่

สามารถกลับมาเข้าร่วมในโครงการนี้ได้อีก ทั้งนี้เนื่องจากข้อมูลของท่านที่จำเป็นสำหรับใช้เพื่อการวิจัยไม่ได้ถูกบันทึก

สิทธิ์ของผู้เข้าร่วมในโครงการวิจัย

ในฐานะที่ท่านเป็นผู้เข้าร่วมในโครงการวิจัย ท่านจะมีสิทธิ์ดังต่อไปนี้

1. ท่านจะได้รับทราบถึงลักษณะและวัตถุประสงค์ของการวิจัยในครั้งนี้

2. ท่านจะได้รับการอธิบายถึงความเสี่ยงและความไม่สบายที่จะได้รับจากการวิจัย

3. ท่านจะได้รับการอธิบายถึงประโยชน์ที่ท่านอาจจะได้รับจากการวิจัย

4. ท่านจะมีโอกาสได้ซักถามเกี่ยวกับงานวิจัยหรือขั้นตอนที่เกี่ยวข้องกับงานวิจัย

5. ท่านจะได้รับทราบว่าการยินยอมเข้าร่วมในโครงการวิจัยนี้ ท่านสามารถขอถอนตัวจากโครงการเมื่อไรก็ได้ โดยผู้เข้าร่วมในโครงการวิจัยสามารถขอถอนตัวจากโครงการโดยไม่ได้รับผลกระทบใด ๆ ทั้งสิ้น

6. ท่านจะได้รับสำเนาเอกสารใบยินยอมที่มีทั้งลายเซ็นและวันที่

7. ท่านจะได้โอกาสในการตัดสินใจว่าจะเข้าร่วมในโครงการวิจัยหรือไม่ก็ได้ โดยปราศจากการใช้อิทธิพลบังคับ ข่มขู่ หรือการหลอกลวง

8. ข้อมูลของผู้เข้าร่วมการวิจัยเป็นรายบุคคลอาจมีคณะบุคคลบางกลุ่มเข้ามาตรวจสอบ ได้ เช่น สถาบันหรือองค์กรของรัฐที่มีหน้าที่ตรวจสอบ รวมถึงคณะกรรมการจริยธรรมการวิจัยในคน เป็นต้น

เภสัชกร อนันต์ อุดมพรประภา
ผู้วิจัย

นางแจ่มจิตต์ เทพนามวงศ์
พยาบาลหัวหน้าหอผู้ป่วยศัลยกรรมกระดูกชาย
ผู้ร่วมวิจัย

APPENDIX B

แบบแสดงความยินดีเข้าร่วมการวิจัย

ส่วนที่ 2 แบบแสดงความยินดีร่วมในการวิจัย

ข้าพเจ้า…….....ได้รับการอธิบายจากผู้วิจัยถึงวิธีการ วัตถุประสงค์และประโยชน์ของการวิจัยครั้งนี้โดยละเอียด และสิทธิ์ที่ข้าพเจ้าจะได้รับข้อมูลเพิ่มเติมทั้งทางด้านประโยชน์และโทษจากการเข้าร่วมการวิจัย ข้าพเจ้าสามารถถอนตัวหรืองดเข้าร่วมการวิจัยได้ทุกเมื่อ โดยจะไม่มีผลกระทบต่อการบริการและการรักษาพยาบาลที่ข้าพเจ้าจะได้รับต่อไปในอนาคต และยินยอมให้ผู้วิจัยใช้ข้อมูลส่วนตัวของข้าพเจ้าที่ได้รับจากการวิจัย แต่จะไม่เผยแพร่ต่อสาธารณะเป็นรายบุคคล โดยจะนำเสนอเป็นข้อมูลโดยรวมจากการวิจัยเท่านั้น

ข้าพเจ้า ได้รับทราบข้อมูลของโครงการข้างต้นตลอดจนข้อดีข้อเสียที่จะได้รับจากการเข้าร่วมโครงการครั้งนี้

ข้าพเจ้า สามารถออกจากการวิจัยหากมีเหตุขัดข้องโดยไม่ต้องบอกเหตุผลแม้ว่าจะได้เซ็นยินยอมเข้าร่วมวิจัยแล้ว **และข้าพเจ้ายินยอมที่จะเข้าร่วมในโครงการดังกล่าว จึงลงลายมือชื่อไว้**

ลงชื่อ..... **ผู้เข้าร่วมวิจัย**

วันที่.....เดือน.....พ.ศ.2553

ลงชื่อ.....**ผู้แทนโดยชอบธรรม**

วันที่..... เดือน.....พ.ศ.2553

ลงชื่อ..... **ผู้ให้ข้อมูลและขอความยินยอม/หัวหน้าโครงการวิจัย**

วันที่.....เดือน….....พ.ศ.2553

ในกรณีผู้เข้าร่วมการวิจัยอ่านหนังสือไม่ออกผู้ที่อ่านข้อความทั้งหมดแทนผู้เข้าร่วมการวิจัยคือ

..... จึงได้ลงลายมือชื่อไว้เป็น **พยาน**

ลงชื่อ..... **พยาน**

วันที่..... เดือน.....พ.ศ.2553

ที่.....

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APPENDIX C

คุณภาพชีวิตผู้ป่วยกระดูกสะโพกหัก ประเมินด้วยแบบสอบถามคุณภาพชีวิตชนิดเอสเอฟ -36 ฉบับภาษาไทยรุ่นที่ 2

แบบรายงานการเก็บข้อมูลการวิจัย (CASE REPORT FORM)

(ชื่อและลายเซ็นผู้วิจัยหลัก.....)

(ชื่อและลายเซ็นผู้วิจัยรอง .....)

(ชื่อและลายเซ็นผู้วิจัยรอง.....)

Patient no |___|___| **Code no.** 1-|___|___|___|

Patient's initials Surname |___|___|___| First name |___|___|___|

ข้อแนะนำในการกรอกข้อความและเก็บข้อมูล

ควรบันทึกข้อมูลให้สมบูรณ์ทุกรายการตามคำแนะนำข้างล่างนี้

1. ใช้ปากกาสีดำสนิทในการบันทึกและเก็บข้อมูล

2. เขียนลายมือบรรจงให้อ่านง่ายชัดเจน

3. ให้ลงบันทึก วัน เวลา ที่ถูกต้องเข้าใจง่าย

4. การบันทึกเวลาให้ใช้รูปแบบ **24** ชั่วโมง

5. ควรบันทึกตัวเลขให้สมบูรณ์หากไม่มีให้บันทึกเลขศูนย์และบันทึกจากขวามาซ้ายให้เต็มก่อน

6. ถ้าไม่สามารถเก็บข้อมูลได้ให้บันทึกตามตัวอย่าง

7. การแก้ไขข้อมูลหรือตัวเลขแต่ละครั้งให้เซ็นชื่อรับรองตามตัวอย่าง และ **8** ให้กากบาทให้ตรงตามตัวอย่างที่ให้ไว้

~~|2|5|5|3| |3|1| |0|1|~~ ปี วันที่ เดือน	|3|1| |0|1| |2| 5|5|3| วันที่ เดือน ปี
~~9: 00 น~~	| 2 | 1 | : | 0 | 0 | Hours Minutes
	| 0 | 7 | 5 |
~~พื้นที่ ว่าง~~	ให้ลงบันทึกเป็น +||+ N D
☒ ใช่ หรือ ถูกต้อง	

วันที่คัดกรองผู้ป่วย |____|____| |____|____| |____|____|____|____|
วันที่ เดือน ปี

ข้อมูล รายละเอียด และ การยินยอมเข้าร่วมโครงการวิจัยจากผู้ป่วย (Eligibility Criteria)

วันที่ พร้อมลายเซ็น เมื่อผู้ป่วยยินยอมเข้าร่วมโดรงการวิจัย |___|___| |___|___| |___|___|___|___|

เกณฑ์การพิจารณา <u>คัดกรองผู้ป่วยที่สามารถเข้าร่วมโครงการวิจัย</u> (Inclusion Criteria)

	ใช่	ไม่ใช่
1. เพศ ชาย หรือ หญิง อายุ 50 ปีขึ้นไป เป็นผู้ป่วยนอกหรือผู้ป่วยใน	☐	☐
2. ได้รับการวินิจฉัยกระดูกสะโพกหักตาม WHO ICD 10	☐	☐
3. กระดูกสะโพกหักได้รับการยืนยันโดยการเอกซ์เรย์	☐	☐
4. ไม่มีข้อห้ามใดๆที่จะเกิดผลข้างเคียงที่เสียหายจากการตอบแบบสอบถาม MOS SF-36	☐	☐
5. ผู้ป่วยที่แพทย์สงสัยว่า มีประวัติโรคและอาการทางจิตประสาท	☐	☐

เกณฑ์การพิจารณา <u>คัดออกผู้ป่วยที่ไม่สามารถเข้าร่วมโครงการวิจัย</u> (Exclusion Criteria)

	ใช่	ไม่ใช่
1. ผู้ป่วยได้รับการวินิจฉัยว่ามีอาการไตวายเรื้อรัง	☐	☐
2. ผู้ป่วยได้รับการวินิจฉัยว่ามีอาการโรคตับ	☐	☐
3. ผู้ป่วยที่แพทย์สงสัยว่าอาจมีอาการโรคจิตประสาท	☐	☐
4. ผู้ป่วยได้รับการวินิจฉัยว่าเป็นโรคมะเร็ง	☐	☐
5. ผู้ป่วยแสดงความจำนงค์ไม่ให้ความร่วมมือในการตอบแบบสอบถาม	☐	☐
6. ผู้ป่วยปฏิเสธในการเซ็นใบยินยอมให้ข้อมูล	☐	☐

☞ **ผู้ป่วยที่ได้รับการพิจารณาว่า<u>ไม่ใช่ในเกณฑ์การคัดกรองเข้า และใช่ในเกณฑ์การคัดออก</u> ไม่สามารถเข้าร่วมการวิจัยได้**

ข้อมูลและ ประวัติเบื้องต้นผู้ป่วยที่คัดกรองเข้าร่วมการวิจัย

คลินิกศัลยกรรมกระดูก (01) ☐ หอผู้ป่วยศัลยกรรมกระดูกชาย (02) ☐

หอผู้ป่วยศัลยกรรมกระดูกหญิง (03) ☐

โปรดตอบคำถามทุกคำถาม โดยการขีดเครื่องหมาย X ใน ☐ ดังตัวอย่าง ☒

หลังตัวเลือกที่ตรงกับความเห็นของท่านมากที่สุดเพียง 1ตัวเลือกในแต่ละข้อ

ตอนที่ 1 ข้อมูลเกี่ยวกับตัวท่าน

1. ผู้แสดงความคิดเห็น ผู้ป่วย(01) ☐ ญาติ (02) ☐ ผู้ดูแล (03) ☐

2. เพศของท่าน ชาย (01) ☐ หญิง (02) ☐

3. อายุ..... ☐☐. ปี

4. สถานภาพการแต่งงาน โสด(01) ☐ หย่า (02) ☐ หม้าย (03) ☐

แต่งงาน (04) ☐

5. วุฒิการศึกษาสูงสุดที่ได้รับ

ไม่ได้เรียน (01) ☐ ประถมศึกษาหรือ ต่ำกว่า (02) ☐

มัธยมศึกษาตอนต้น (03) ☐ มัธยมศึกษาตอนปลาย - ปวช. อนุปริญญาหรือปวส (04) ☐

ปริญญาตรี สูงกว่าปริญญาตรี (05) ☐

6.สถานะทางการเงินของท่าน เพียงพอ เหลือเก็บ(01) ☐

เพียงพอ ไม่เหลือเก็บ(02) ☐

ไม่เพียงพอ ต้องขอลูกหลานและครอบครัว(03) ☐

7.รายได้ของท่านจากการประกอบอาชีพ

น้อยกว่า 5,000 บาท ต่อเดือน (01) ☐

5,000-10,000 บาท ต่อเดือน (02) ☐

10,000-30,000 บาท ต่อเดือน (03) ☐

มากกว่า 30,000 บาท ต่อเดือน (04) ☐

8.ปัจจุบันท่านอาศัยอยู่กับ

สามีหรือภรรยา (01) ☐ ลูกสาวและ/หรือ ลูกชาย (02) ☐ ครอบครัว หรือ ญาติพี่น้อง (03) ☐

อื่นๆ (04) ☐

9.ปัจจุบันใครเป็นผู้ให้เวลาในการดูแลท่านมากที่สุด

สามีหรือภรรยา(01) ☐ ลูกสาว และ/หรือลูกชาย (02) ☐ ครอบครัวหรือญาติพี่น้อง (03) ☐

อื่นๆ (04) ☐

10.ปัจจุบันค่าใช้จ่ายในการรักษาโรคของท่านมาจาก

บัตรบัตประกันสุขภาพ (บัตรทอง) (01) ☐ สวัสดิการข้าราชการ/รัฐวิสาหกิจ (02) ☐

ญาติ พี่น้อง (03) ☐

รายได้ส่วนตัว (04) ☐ สวัสดิการบริษัทนายจ้าง/ประกันสังคม (05) ☐

บริษัทประกันสุขภาพ (06) ☐ รายได้อื่นๆ (07) ☐

ระบุ.....

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ตอนที่ 2 ข้ อมูลเกี่ยวกับสุขภาพและร่างกายของท่าน

โปรดตอบคำถามทุกคำถาม โดยการวงกลมตัวเลือกที่ตรงกับความเห็นของท่านมากที่สุดเพียง 1 ตัวเลือกในแต่ละ

บรรทัด |___|___| |___|___| |___|___|___|___|

ปัจจัยเสี่ยงและปัจจัยทางการแพทย์เกี่ยวกับสุขภาพและร่างกายผู้ป่วย

1. น้ำหนักตัวและส่วนสูงของท่าน ส่วนสูง |___|___|___|___| เซนติเมตร น้ำหนักตัว |___|___|___| กิโลกรัม

BMI |___|___|___|___| **Kg/m^2**

2. ท่านสูบบุหรี่หรือไม่? เคยสูบบุหรี่แต่ปัจจุบันหยุดสูบ(01) ☐ สูบบุหรี่ (02) ☐ ไม่สูบบุหรี่ (03) ☐

3. ท่านดื่มสุราหรือไม่? เคยดื่มแต่ปัจจุบันหยุดดื่ม(01) ☐ ดื่มสุรา (02) ☐ ไม่ดื่มสุรา (03) ☐

4. ท่านมีโรคประจำตัวอื่นๆนอกจากกระดูกหักหรือไม่ ?

ไม่มีโรคประจำตัวอื่นๆ (01) ☐

มีโรคประจำตัวอื่นๆ (02) ☐

ได้แก่โรค 1 โรคความดันโลหิตสูง (03) ☐ โรคหัวใจล้มเหลว (04) ☐ โรคหลอดเลือดหัวใจ (05) ☐

โรคเบาหวาน (06) ☐ โรคหลอดเลือดสมอง (07) ☐ โรคอื่นๆ (08) ☐

5. สาเหตุ เหตุจูงใจที่ท่านมาตรวจเกี่ยวกับกระดูกสะโพกหักที่โรงพยาบาล ?

มีอาการเจ็บปวดเป็นสาเหตุหลัก (01) ☐

ท่านได้รับการวินิจฉัยเกี่ยวกับกระดูกหักมาก่อนเป็นสาเหตุหลัก (02) ☐

สาเหตุอื่นๆ (03) ☐

ตอนที่ 2 ข้ อมูลเกี่ยวกับสุขภาพและร่างกายของท่าน

6. ท่านคิดว่าสาเหตุของกระดูกหักครั้งนี้เป็นเหตการณ์ที่น่าจะเกิดจาก

กระดูกสะโพกหักครั้งแรก (01) ☐ กระดูกสะโพกหักซ้ำซ้อน (02) ☐

และท่านสามารถคาดคะเนระยะเวลานับจากการเกิดครั้งแรกประมาณ …….....….เดือน

มีอาการที่ท่านสงสัยภายหลังจากเคยเกิดเหตการณ์มาก่อน (03) ☐

กรณีอื่นๆ ที่ท่านไม่สามารถสามารถคาดคะเนได้ได้ (04) ☐

7. สาเหตุของกระดูกหักครั้งนี้เกิดจากสาเหตุใด

เกิดจากการลื่นตกจากบันได (01) ☐

เกิดจากการลื่นไถลโดยทั่วๆไป (02) ☐

เกิดจากสาเหตุอื่นๆ (03) ☐

8. ก่อนเกิดเหตุการณ์กระดูกสะโพกหักความสามารถในการเดินของท่าน

เดินไม่ได้เลย(01) ☐ เดินได้บ้างต้องมีเครื่องมือช่วย (02) ☐ เดินได้ปกติ (03) ☐

9. ก่อนมาพบแพทย์ที่โรงพยาบาลเนื่องจากกระดูกสะโพกหักเพื่อการรักษาท่านมีอาการอย่างไร

เดินไม่ได้เลย (01) ☐ เดินได้บ้างต้องมีเครื่องมือช่วย (02) ☐

เดินได้ปกติแต่มีอาการเจ็บปวด(03) ☐ สาเหตุอื่นๆ (04) ☐

ตอนที่ 3 ข้ อมูลเกี่ยวกับประวัติการรักษาพยาบาลจากโรงพยาบาลเชียงรายประชานุเคราะห์

10. ชนิดของกระดูกสะโพกหักตรวจยืนยันจาก การตรวจทาง X-Ray และวินิจฉัยโดยแพทย์

Femoral Neck (01) ☐ Inter-trochanteric/Subtrochanteric (02) ☐ Other Fracture (03) ☐

12. ผู้ป่วยได้รับการรักษาแบ ผ่าตัด (surgical) (01) ☐

ไม่ผ่าตัด (non-surgical)(02) ☐

APPENDIX D

แบบสอบถามคุณภาพชีวิตชนิดเอสเอฟ -36ฉบับภาษาไทยรุ่นที่ 2

คำแนะนำในการตอบแบบสอบถาม

กรุณาตอบแบบสอบถามให้ครบทุกข้อ คำถามบางข้ออาจมีความคล้ายคลึงกันแต่มีความหมายแตกต่างกัน โปรดใช้เวลาประมาณ 10 นาทีอ่านและตอบคำถามแต่ละข้อให้ถูกต้องตรงตามความเป็นจริงโดยขีดเครื่องหมายถูกในช่องที่ท่านเห็นว่าตรงกับลักษณะของท่านมากที่สุด

ผู้ตอบแบบสอบถาม เป็น ผู้ป่วย ☐ **ตอบแบบสอบถามโดยผู้ดูแลผู้ป่วย** ☐

1.ในภาพรวมท่านคิดว่าสุขภาพของท่าน

☐ ดีเยี่ยม ☐ ดีมาก ☐ ดี ☐ ปานกลาง ☐ เลว

2. เมื่อเปรียบเทียบกับ 1 ปีก่อน ท่านคิดว่าสุขภาพของท่านปัจจุบันเป็นอย่างไร?

☐ ปัจจุบันดีกว่าปีที่แล้วมาก	☐ ปัจจุบันดีกว่าเล็กน้อย	☐ เท่า ๆ กับปีที่แล้ว	☐ ปัจจุบันเลวกว่าปีที่แล้วเล็กน้อย	☐ ปัจจุบันเลวกว่าปีที่แล้วมาก

3. ท่านคิดว่าสุขภาพของท่านในปัจจุบันมีผลให้ท่านทำกิจกรรมต่างๆ ต่อไปนี้ลดลงหรือไม่เพียงใด?

	ลดลงมาก	**ลดลงเล็กน้อย**	**ไม่ลดลงเลย**
3.1 กิจกรรมที่ออกแรงมาก เช่นวิ่ง ยกของหนัก เล่นกีฬาที่ต้องใช้แรงมาก	☐	☐	☐
3.2 กิจกรรมที่ต้องออกแรงปานกลาง เช่น เลื่อนโต๊ะ กวาดถูบ้าน เล่นกีฬาเบา	☐	☐	☐
3.3 ยกถือของเวลาไปซื้อของในห้างสรรพสินค้า	☐	☐	☐
3.4 ขึ้นบันไดหลายชั้น (จากชั้น 1 ไปชั้น 3 หรือมากกว่า)	☐	☐	☐
3.5 ขึ้นบันได 1 ชั้น (จากชั้น 1 ไปชั้น 2)	☐	☐	☐
3.6 ก้มลงเก็บของ คุกเข่า งอตัว	☐	☐	☐
3.7 เดินเป็นระยะทางมากกว่า 1 กิโลเมตร	☐	☐	☐
3.8 เดินทางเป็นระยะทางหลายร้อยเมตร	☐	☐	☐
3.9 เดินประมาณ 100 เมตร	☐	☐	☐
3.10 อาบน้ำหรือแต่งตัว	☐	☐	☐

4. ในช่วง 4 สัปดาห์ที่ผ่านมา ท่านมีปัญหาการทำงานหรือทำกิจวัตรประจำวันซึ่งเป็นผลเนื่องมาจากสุขภาพร่างกายของท่านหรือไม่?

	ตลอดเวลา	ส่วนใหญ่	บางเวลา	ส่วนน้อย	ไม่ใช่
4.1 ต้องลดเวลาในการทำงานหรือทำกิจวัตร	☐	☐	☐	☐	☐
4.2 ทำงานหรือทำกิจวัตรได้น้อยกว่าที่ต้องการ	☐	☐	☐	☐	☐
4.3 ทำงานหรือทำกิจวัตรบางอย่างไม่ได้	☐	☐	☐	☐	☐
4.4 ทำงานหรือทำกิจวัตรได้ลำบากกว่าเดิม	☐	☐	☐	☐	☐

5. ในช่วง 4 สัปดาห์ที่ผ่านมา ท่านประสบปัญหาในการทำงานหรือทำกิจวัตรประจำวันซึ่งเป็นผลสืบเนื่องมาจากปัญหาทางอารมณ์หรือจิตใจ (เช่น รู้สึกซึมเศร้าหรือวิตกกังวล) หรือไม่?

	ตลอดเวลา	ส่วนใหญ่	บางเวลา	ส่วนน้อย	ไม่ใช่
5.1 ต้องลดเวลาในการทำงานหรือกิจวัตร	☐	☐	☐	☐	☐
5.2 ทำได้น้อยกว่าที่ต้องการ	☐	☐	☐	☐	☐
5.3 ไม่สามารถทำได้อย่างระมัดระวังเหมือนปกติ	☐	☐	☐	☐	☐

6. ในช่วง 4 สัปดาห์ที่ผ่านมาก ปัญหาสุขภาพหรืออารมณ์ความรู้สึกของท่านมีผลรบกวนต่อการมีกิจรรมทางสังคมของท่านกับครอบครัว เพื่อน เพื่อนบ้าน หรือกลุ่มมากน้อยเพียงใด?

☐ ไม่รบกวนเลย ☐ รบกวนเล็กน้อย ☐ รบกวนปานกลาง ☐ รบกวนค่อนข้างมาก ☐ รบกวนมาก

7. ท่านมีอาการปวดมากน้อยเพียงใดในช่วง 4 สัปดาห์ที่ผ่านมา

☐ ไม่ปวดเลย ☐ ปวดน้อยมาก ☐ ปวดน้อย ☐ ปวดปานกลาง ☐ ปวดรุนแรง ☐ ปวดรุนแรงมาก

8. ในช่วง 4 สัปดาห์ที่ผ่านมาก อาการปวดรบกวนการทำงาน (ทั้งที่ทำงานและที่บ้าน)มากน้อยเพียงใด?

☐ ไม่รบกวนเลย ☐ รบกวนเล็กน้อย ☐ รบกวนปานกลาง ☐ รบกวนค่อนข้างมาก ☐ รบกวนมาก

9. คำถามต่อไปนี้เกี่ยวข้องกับอารมณ์ความรู้สึกกับท่านในช่วง 4 สัปดาห์ที่ผ่านมา กรุณาให้คำตอบที่ตรงกับความรู้สึกของท่านมากที่สุดในแต่ละคำถามเกิดขึ้นบ่อยเพียงใดในช่วง 4 สัปดาห์ที่ผ่านมาก?

	ตลอดเวลา	ส่วนใหญ่	บางเวลา	ส่วนน้อย	ไม่ใช่
9.1 รู้สึกกระปรี้กระเปร่ามาก	☐	☐	☐	☐	☐
9.2 รู้สึกหงุดหงิดกังวลมาก	☐	☐	☐	☐	☐
9.3 ซึมเศร้าไม่ร่าเริง	☐	☐	☐	☐	☐
9.4 รู้สึกสงบ	☐	☐	☐	☐	☐
9.5 รู้สึกเต็มไปด้วยพลัง	☐	☐	☐	☐	☐
9.6 รู้สึกหมดกำลังใจ ซึมเศร้า	☐	☐	☐	☐	☐
9.7 รู้สึกอ่อนเพลีย ไม่มีกำลัง	☐	☐	☐	☐	☐
9.8 รู้สึกมีความสุขดี	☐	☐	☐	☐	☐
9.9 รู้สึกเบื่อหน่าย	☐	☐	☐	☐	☐

10. ในช่วง 4 สัปดาห์ที่ผ่านมา ปัญหาสุขภาพหรืออารมณ์ความรู้สึกของท่านมีผลรบกวนต่อเวลาการมีกิจกรรมทางสังคมของท่าน (เช่น ไปเยี่ยมญาติหรือเพื่อน) มากน้อยเพียงใด

☐ ตลอดเวลา ☐ ส่วนใหญ่ ☐ บางเวลา ☐ ส่วนน้อย ☐ ไม่มีเลย

11. ข้อความต่อไปนี้ตรงกับสุขภาพของท่านหรือไม่

	ถูกต้องที่สุด	ส่วนใหญ่ถูกต้อง	ไม่ทราบ	ส่วนใหญ่ไม่ถูกต้อง	ไม่ถูกต้อง
11.1 ไม่สบายหรือเจ็บป่วยง่ายกว่าคนทั่วไป	☐	☐	☐	☐	☐
11.2 มีสุขภาพดีเท่ากับคนอื่นๆ	☐	☐	☐	☐	☐
11.3 คิดว่าสุขภาพจะเลวลง	☐	☐	☐	☐	☐
11.4 มีสุขภาพดีเยี่ยม	☐	☐	☐	☐	☐

ขอแสดงความขอบคุณที่ท่านได้สละเวลาในการตอบแบบสอบถามนี้

APPENDIX E

COMPARATIVE DATA OF MOS SF-36 NORM IN DIFFERENT

RACE REPORTED AFTER YOSHIOKA MR

Name of Measure: The Medical Outcomes Study short form (SF-36) (Ware & Sherbourne,1992)
Purpose of Measure: To assess health related quality of life

Author(s) of Abstract:
Marianne R. Yoshioka, Ph.D.
Columbia University School of Social Work,
622 West 113th Street, New York, NY 10025
212-854-5669
mry5@columbia.edu

Reference: Yoshioka M. unpublished data. The research reported here was supported by funds provided by a NIH award, (Grant 2P01 DK42618-06A)

Description of measure: The Medical Outcomes Study short form (SF-36) is a 36-item instrument for measuring health status and outcomes from the patient's point of view. Designed for use in surveys of general and specific populations, health policy evaluations, and clinical practice and research, the survey can be self administered by people 14 years of age of older, or administered by trained interviewers either in person or by telephone. This instrument has been widely used in clinical studies and has been demonstrated to have adequate psychometric integrity (McHorney, Ware, & Raczek, 1993; Ware & Sherbourne, 1992). The SF-36 measures the following eight health concepts, which are relevant across age, disease and treatment groups:

- Limitations in physical activities because of health problems;
- Limitations in usual role activities because of physical health problems;
- Bodily pain;
- General health perceptions;
- Vitality (energy and fatigue);
- Limitations in social activities because of physical or emotional problems;
- Limitations in usual role activities because of emotional problems; and
- Mental health (psychological distress and well-being).

Based on a sample of 2,462 subjects, McHorney et al., (1993) report that based on their scores on the SF-36, patients with minor and with serious medical conditions could be distinguished on aggregate. Patients with serious medical conditions scored significantly lower.

Language Availability: English only.
Translation Comments: N/A.

Description of Asian population: Thirty-three healthy adults recruited into a medical study of body composition (i.e., the measurement of bone composition, water and mineral content) conducted in a large city in the northeastern United States. Participants were identified only in terms of race (e.g. Asian). These Asian adults were 41 years old (s.d. 21 years) on average, 45.5% were men and 54.5% were women.

Norms:

Average Total Scores (Standard Deviations) for MOS sub-scales by race

	Asian N=33	White N=45	Black N=39	Hispanic N=33	Other N=26	Total N=176
Physical Functioning	89.09 (17.92)	88.44 (17.93)	89.10 (18.81)	89.70 (21.25)	95.38 (8.82)	89.97 (17.76)
Role limits due to health problems*	97.73 (9.61)	79.44 (35.07)	88.46 (26.19)	85.60 (28.66)	91.35 (18.63)	87.78 (26.72)
Body pain	82.85 (10.08)	74.96 (16.80)	75.62 (20.11)	77.33 (19.04)	79.77 (11.02)	77.74 (16.42)
General Health	80.06 (13.26)	75.47 (17.1)	77.15 (16.55)	79.03 (16.73)	79.34 (22.25	77.94 (17.03)
Vitality	71.06 (12.79)	61.44 (17.92)	65.77 (19.75)	60.15 (23.67)	62.31 (21.22)	64.10 (19.42)
Social functioning	93.56 (14.70)	83.61 (21.12)	83.33 (21.52)	82.57 (24.19)	83.65 (18.29)	85.23 (20.58)
Role limits due to emotional problems	90.90 (20.87)	75.56 (36.51)	85.47 (27.35)	77.78 (36.00)	92.31 (23.68)	83.52 (30.65)
Mental Health	82.79 (13.95)	74.04 (14.89)	76.72 (17.81)	73.45 (17.43)	74.15 (14.93)	76.18 (16.10)

* $p < .05$ Post hoc testing show that Asians score significantly higher than Whites on the role limitations due to health problems sub-scale ($p < .05$). All other inter group differences were non-significant.

Reliability: Cronbach alpha coefficients were computed based on the responses of the 33 Asian adults: General Health (5 items) = .5771; Mental Health (5 items) = .7719; Physical functioning (10 items) = .8976; Limits due to emotional problems (3 items) = .5870; Limits due to health problems (2 items) = .7165; Vitality (4 items) = .5188; Body Pain (2 items) = .7165; Social Functioning (2 items) = .5425.

Validity: Established by Ware & Sherbourne (1992)

Reference to original instrument:

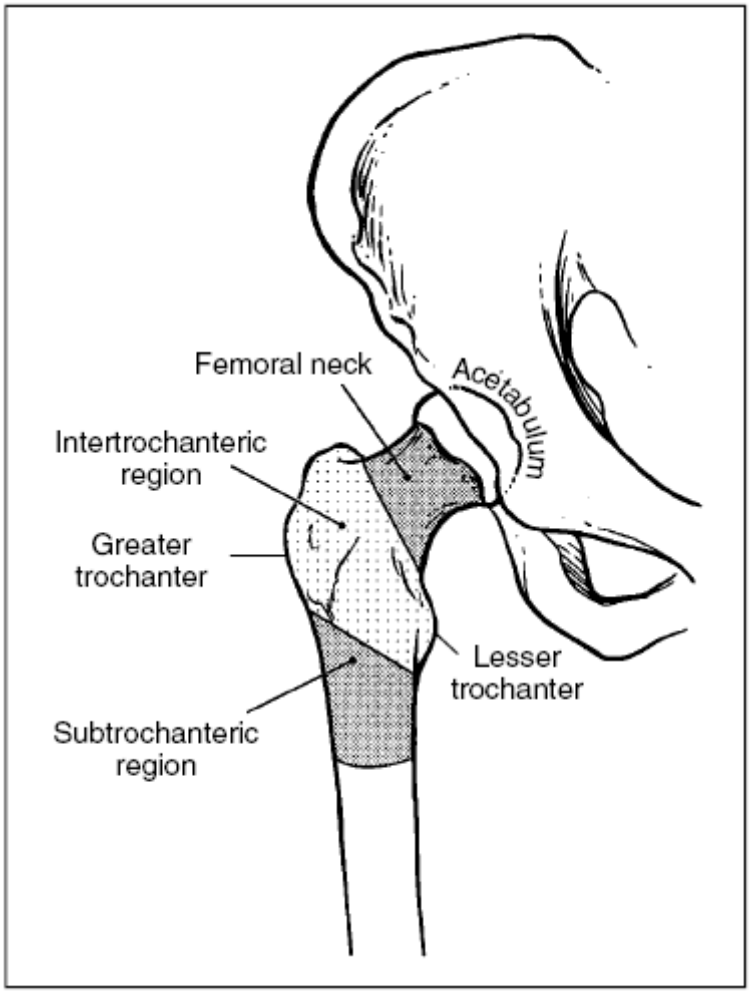
Ware, J.E., & Sherbourne, C.D. (1992). The MOS 36-item short-form health survey (SF-36). *Medical Care, 30*(6), 473-483.

How to obtain a copy of the instrument: Copyright permission to use the SF-36 must be obtained from the Medical Outcomes Trust 617-426-4046 or www.sf-36.com

APPENDIX F

Figure 17. An overview of Location of Hip Fracture

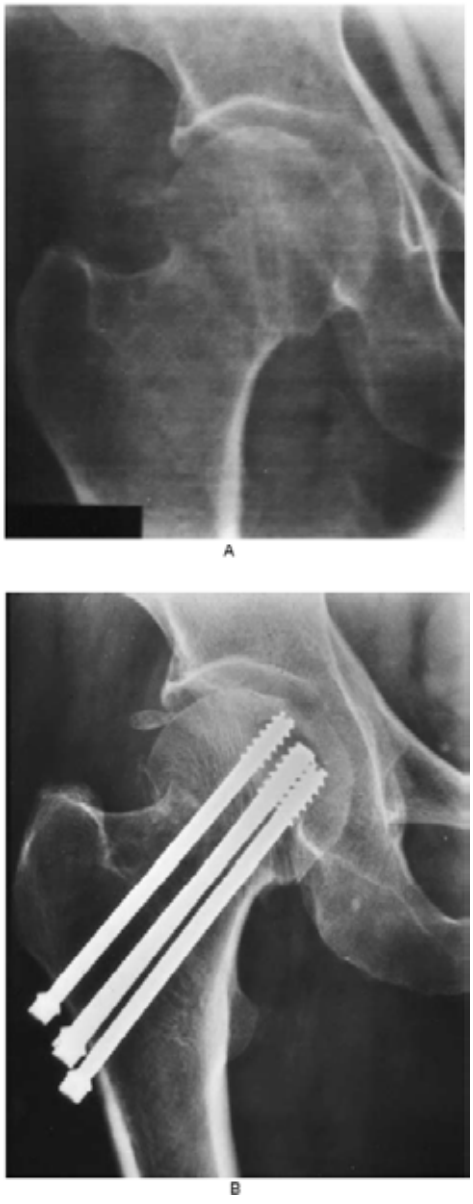
After Zuckerman JD et al, N Eng J Med.(June 6,1996) (29)



Location of Hip Fractures, Fractures of the proximal femur are classified on the basis of their location in the femoral neck, intertrochanteric region, or subtrochanteric region.

Figure 18. An overview of Displaced Femoral-Neck Treated with Internal Fixation

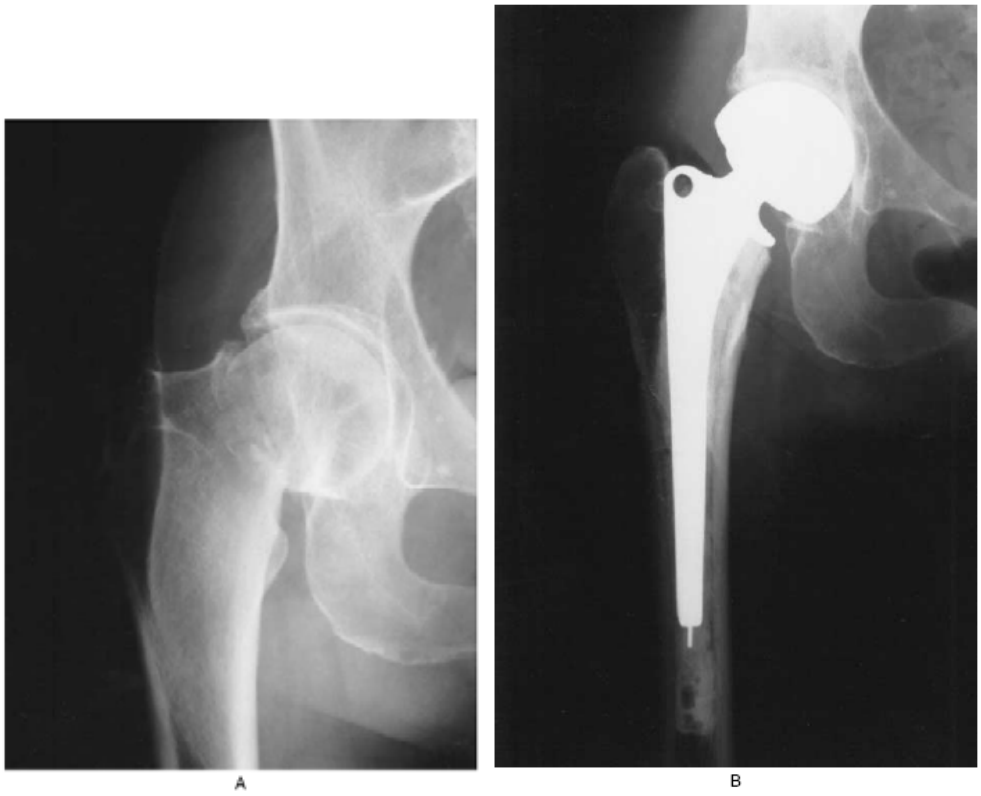
After Zuckerman JD et al, N Eng J Med.(June 6,1996) (29)



The case of minimally displaced fracture of the Femoral-Neck Fracture (Panel A) in a 74-Year-old Woman Treated by Internal Fixation with Multiple Screws(Panel B). The risk of nonunion and osteronecrosis of the femoral head is very low, and internal fixation is a preferable to prosthetic replacement

Figure190. An overview of Displaced Femoral-Neck Treated with Hemiarthroplasty

After Zuckerman JD et al, N Eng J Med.(June 6,1996) (29)

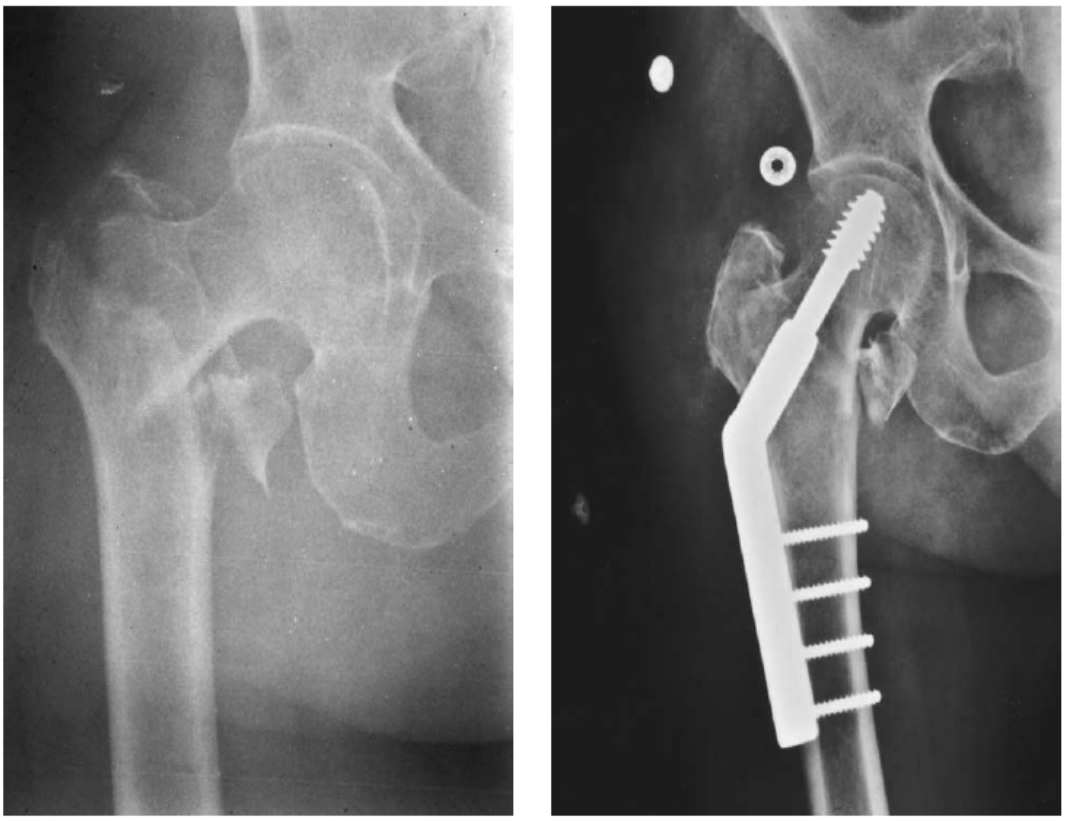


In panel A, a displaced Femoral-Neck in an 81-Year-Old Woman Treated by Prosthetics Replacement with a Hemiarthroplasty in panel B

The displaced fractures, the risk of nonunion and osteonecrosis of the femoral head is substantial, making prosthetic replacement the preferred procedure.

Figure 20. An overview of Intertrochanteric Fracture Treated with Internal Fixation with Sliding Hip Screws

After Zuckerman JD et al, N Eng J Med.(June 6,1996) (29)



An Intertrochanteric Fracture (Panel A) in a 77-Year-Old Man Treated by Internal Fixation with a Sliding Hip Screw (Panel B).

The device provides controlled impaction of the fracture, which encourages healing and allows early mobilization and weight bearing. Fixation of the displaced fragment of the lesser trochanter was not required to achieve a stable reduction, because of the small size of the fragment

APPENDIX G

A patient's proxy note

From female hip fracture patient age 104 years old

8/3/54

- pt ดูมีความสุข ร่าเริง ยิ้มแย้ม แจ่มใส. [illegible] ทักทายดี
  และ ยังสามารถทำงานที่ไม่มี mvt ของได้ (นั่งแกะมะขามขาย).

- 2 เดือน ก่อนหน้า มีอาการซึม เศร้า เป็นบางครั้ง เนื่องจาก คิดว่า
  ตัวเอง เป็นภาระของครอบครัว

- ปัจจุบันไม่มีอาการดังกล่าว เนื่องจากได้ทำงาน (แกะมะขามขาย)

<u>ความต้องการปัจจุบัน</u>

- ต้องการ อุปกรณ์ช่วย เช่น รถเข็นนั่ง เพื่อจะได้ ออกไป
  เยี่ยมเยียน เพื่อนบ้านบ้าง.

- Case fx neck of femur เมื่อ 2 มี.ค. 53
- ไม่ได้รับการผ่าตัดต่อเนื่อง ไม่ได้รับการทำกายภาพบำบัด.
- ได้รับการนวด 10 ครั้ง เมื่อ fx. หลังจาก fx ไป off bed 1 ครั้ง.
  หลังจากนั้น ไม่ได้รับการรักษาต่อ.

จนท จากงาน เวชกรรมฟื้นฟู

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XXXXXXXXX

BIOGRAPHY

Mr. Anan Udombhornprabha

Investigator was professionally trained as a pharmacist, conferred with a B. Sc. (Pharmacy), from the Faculty of Pharmacy, Chiang Mai University, THAILAND since 1984, and was nominated from the Indian Embassy in Bangkok for a scholarship granted by the Government of India under the General Cultural Scheme in 1985 to pursue further education, then earned an M. Pharm. (Pharmacology) from the Faculty of Medicine, Nagpur University, INDIA in 1987. Later during employment in the pharmaceutical industry was partly sponsored by the employer and then obtained an M.B.A. from the Faculty of Business Administration, Kasetsart University, THAILAND since 2001.

Investigator has roles and experiences in research & development both in pharmaceutical and healthcare industry. As a Scientific Affairs Manager for Servier Thailand, investigator is in charge of research project initiated by Servier Research and Development sub-region based in Singapore in terms of collaboration for a feasibility study of Phase II/III. Investigator actively self-initiate Phase IV clinical trials in Thailand especially for the Patient-reported Outcomes (PROs) trials, Medication Adherence to Treatment (MAT) trials and other health economics study as part of outcomes research.

Apart from main duties and responsibilities employed by Servier Thailand. Investigator is actively engaging in pharmacoeconomics and outcomes research scientific activities, as an active member for the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) since 2009, such as being active group member of ISPOR for:

- Risk Assessment and Pharmacovigilance
- Patient-reported Outcomes
- Medication Adherence to Treatment

For the academic activities of ISPOR, investigator was assigned by ISPOR-scientific committee for the following:

- Research abstract reviewer(assigned for ISPOR-14th European Annual Meeting 2010)
- Prospective Observational Studies to Assess Comparative Effectiveness (invited as one of reviewer group in 2011)

Email address: auyuyg@gmail.com ; ananudom@hotmail.com