Tehran University of Medical Sciences

International Campus

Nursing and Midwifery School

Title:

Assessing the caregiver burden and quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences 2024

"A thesis submitted as partial fulfillment of the requirements for Master of Science (MSc) Degree"

In

Medical Surgical Nursing

By

Aisha Yakubu Idris

Supervisor

Dr. Golnar Ghane

2024-2025

Register number:

In the name of God

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Declaration

I, **Aisha Yakubu Idris** declare that all written materials in this dissertation are the researcher's original work, except those materials which were used for the referenced citations in the text. It is being submitted for the Degree of Master of Science in Medical surgical nursing in the TUMS- IC. It has not been presented and will not be presented to any other university for a similar or any other degree award.

Sign:

Dedication:

I dedicate this Accomplishment to my family for their endless love and support.

I also dedicate this work to my friends and professors, whose guidance and encouragement helped me through this journey.

Acknowledgment:

I would like to begin by thanking God for His guidance, strength, and blessings throughout this journey**.** A special thank you to my family for their love, encouragement, and constant support. To my parents and siblings, your belief in me has been a great source of motivation.

I extend my heartfelt thanks to my supervisor, Assistant professor Golnar Ghane for her invaluable guidance, expertise, and patience throughout this research. Your feedback and direction have been critical to the successful completion of this work.

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I would like to express my deepest gratitude to the reviewers, Dr. Pour-Aboli, Dr. Karimi and Dr. Aminaei, who carefully and patiently read this thesis and minimized the existing errors and mistakes with their comments.

Lastly, I would like to thank Tehran university of medical sciences for providing me with the environment to complete this research.

Thank you all for being part of this achievement

Aisha Yakubu Idris

Abstract

Title:

Assessing the caregiver burden and quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences 2024

Background:

Due to the long course of hip fracture treatment, severe disability and dependence of patients in daily activities, experiencing numerous complications after hip fracture and immobility, a lot of care needs and fundamental changes in the lifestyle of patients with hip fracture, Caregivers experience stress and face physical and psychological challenges. Therefore, caregivers of hip fracture patients maybe face a burden due to the demands of providing care to their loved ones. This burden maybe impact the quality of life of patients and caregivers. Therefore, this study was done to identify caregiver burden and quality of life in people with hip fractures in selected hospitals of Tehran University of Medical Sciences.

Methods:

The present study was a cross-sectional descriptive-analytic study that investigated the caregiver burden and quality of life and the relationship between them in caregivers of people with hip fractures in selected hospitals of Tehran University of Medical Sciences in 1403. The research population included all caregivers of patients with hip fractures. 150 eligible caregivers were selected from the research population using a convenient method. Caregivers of patients with Hip Fractures completed the demographic questionnaire, Short-form quality of life (SF-36) and the caregiver burden (CBI24) after obtaining written consent. Data were analyzed using SPSS software (V 16) using Descriptive and inferential statistics and Pearson correlation coefficient ($p<0.05$).

Results:

The mean score of caregiver burden was 66.15±17.14, which indicates moderate caregiver burden among caregivers with a range of (28-112). This range indicated different caregiver burden experiences among caregivers. The dimensions, time-related caregiver burden with a mean of 19.66 and a standard deviation of 4.26, had the highest mean, and emotional caregiver burden with a mean of 9.57 and a standard deviation of 4.09, had the lowest mean. Also, the mean of caregivers' quality of life was 61.90±17.15, which indicates moderate quality of life with a range of (21.94-18.21). There was a negative and significant relationship between caregiver burden and quality of life ($r = -0.525$, $P <0.001$). This means that as the

level of caregiver burden increases, the quality of life of the caregiver tends to decrease. This inverse relationship suggests that caregiver burden has a negative impact on various aspects of the caregiver's life, including physical health, emotional well-being, social functioning, and overall quality of life.

Conclusions and recommendations:

An inverse relationship was observed between caregiver burden and quality of life, indicating that as caregiver burden increases, the quality of life for caregivers tends to decrease. These findings highlight the significant impact of caregiving responsibilities on the well-being of caregivers and underscore the need for supportive interventions to alleviate caregiver burden and enhance the quality of life for this population.
The variability in scores highlights the heterogeneity of the caregiving experience and underscores the need for personalized support and interventions. Caregivers may require assistance in managing their time, coping with the developmental aspects of caregiving, and addressing physical and emotional health challenges to improve their overall quality of life. Additionally, the findings emphasize the importance of considering the caregivers perspective when planning care for hip fracture patients, as the caregiver's well-being can impact the quality of care provided to the patient.

Keywords: Caregiver burden, Quality of Life, Patients, Hip Fractures, Caregiver

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Chapter one

Introduction and problem statement

1.1 Introduction

Hip fracture is one of the most common orthopedic injuries and a serious and complex condition reported as one of the top ten causes of morbidity, mortality, and increased healthcare costs in today's world (1, 2). It includes two types of fractures: intertrochanteric fracture and femoral neck fracture (3). Most studies have investigated the prevalence of acute and chronic complications after fracture surgeries, such as mortality, inability to walk, deep vein thrombosis, embolism, infection, secondary fracture, improper fusion, and deformity. Unfortunately, most of these patients did not return to functional levels before the fracture (4-7). The mortality rate in people with hip fractures is high (8, 9). In addition to long periods of hospitalization and heavy surgeries, they require periods of rehabilitation and long-term care to recover mobility (10, 11).

Studies have shown that despite medical advances, recovery after hip fractures has not significantly improved in the past 25 years (12, 13). Many patients who survive will lose the ability to live independently, and at least 50% of patients need help with normal daily activities, with about 25% of them transferred to long-term care (14). Therefore, one of the main problems is the low rate of patient return to daily activities (8). These patients encounter moving limitations, high risks of falls, muscle dysfunction, and disability for a long time (14-16).

Most of these patients face difficulties performing daily activities, loss of self-care ability, independence, poor mental performance, decreased quality of life, delayed wound healing, high rates of postoperative complications, prolonged rehabilitation time, unmet care needs, cognitive impairment, and depression that limit their social activities, role-playing, and returning to their normal life (11, 16-18). Hip fracture is perceived as a catastrophic accident with long-term negative effects on the patient's lifestyles and quality of life as well as their families, who often refer to care centers (12, 19). In the long-term treatment process, personal strategies used and family and community support play an important role (15, 20, 21). Keeping patients in care centers significantly reduces their personal and social participation (22, 23). Therefore, the effects of contextual, personal, and cultural factors on patients' attitudes and their coping strategies are undeniable (19, 24).

In many cases, family members take on the role of caregivers, providing physical assistance, emotional support, and supervision during the recovery process (21, 25). The responsibilities associated with caregiving for hip fracture

patients can be both physically and emotionally demanding. Caregivers often face a multitude of challenges, including assisting with activities of daily living, managing medications, coordinating medical appointments, and coping with the psychological and emotional stressors that can arise from witnessing a loved one's pain and functional decline (15, 21, 26). These demands can lead to a phenomenon known as "caregiver burden," which encompasses feelings of stress, depression, anxiety, and a sense of being overwhelmed by the caregiving role(27).

Moreover, the impact of caregiving extends beyond the emotional and psychological well-being of caregivers; it also has significant implications for their own quality of life (14, 15). The term "quality of life" encompasses a broad range of factors, including physical health, mental well-being, social relationships, and overall life satisfaction. Caregivers of hip fracture patients may experience disruptions in their own quality of life due to the time and energy devoted to caregiving tasks, which can lead to reduced personal well-being, compromised social lives, and even physical health issues(27-29). Also, The quality of life of caregivers can be affected in various ways. They may experience increased stress, anxiety, and depression. The demands of caregiving can limit their social activities, work opportunities, and personal time, which can further impact their overall well-being (26, 30).

Hip-fracture patients are among the most vulnerable of hospitalized patients. The associated caregiving rehabilitation task often falls to a member of the patient’s family (28). Informal caregivers are an important resource for elderly patients suffering from a hip fracture because they play a key role during their recovery(30). A mutual relationship seems to exist between the patient’s psychological well-being and the caregiver’s burden, so that improvements in the state of health of the one boost that of the other, and vice versa (23, 26).

Caregivers of hip fracture patients often face a significant burden due to the demands of providing care to their loved ones (11, 13). This burden can have a impact on the quality of life in patient and caregivers (2, 13, 31). Several studies have explored the relationships between caregiver burden and quality of life in this specific caregiving context (11). Furthermore, Caregiver burden and the quality of life of caregivers play pivotal roles in the care and well-being of patients with hip fractures (14, 16). However, so far, no study has been presented for caregivers of hip fracture patients in Iran. Therefore, this study will be done with the purpose to identify caregiver burden and quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences. This study is in line with the research priority of the Medical Surgical

Nursing Department in the field of patient-centered and family-centered care. The results of this descriptive study can be helpful in designing effective interventions and improving the quality of life of these patients and their caregivers.

When estimating recovery times and health-related outcomes of patients with hip fractures, healthcare providers should also consider the quality of life and caregiver burden on their family caregivers. An understanding of the relationships between caregiver-related predictors and the recovery and quality of life in these patients might provide a more holistic view of that recovery. The results of this descriptive study can be helpful in designing effective interventions and improving the quality of life of these patients and their caregivers.

This introduction sets the stage for exploring the complex interplay between caregiver burden and the quality of life in caregivers of hip fracture patients. A comprehensive understanding of these factors is essential for healthcare providers, policymakers, and researchers to develop effective support systems and interventions that can alleviate caregiver burden and enhance the quality of life for those who selflessly care for hip fracture patients.

1.2 PROBLEM STATEMENT

Hip fracture is one of the most common orthopedic injuries and a serious and complex condition reported as one of the top ten causes of morbidity, mortality, and increased healthcare costs in today's world(2, 8). Studies have shown that despite medical advances, recovery after hip fractures has not significantly improved in the past 25 years. Many patients who survive will lose the ability to live independently, and at least 50% of patients need help with normal daily activities, with about 25% of them transferred to long-term care(6, 24, 32). One of the main problems is the low rate of patient return to daily activities(33). Therefore, they need to family and social support. Hip fracture is perceived as a catastrophic accident with long-term negative effects on the patient's lifestyles and quality of life as well as their families, who often refer to care centers(2, 34).

In many cases, family members take on the role of caregivers, providing physical assistance, emotional support, and supervision during the recovery process(11, 15). The responsibilities associated with caregiving for hip fracture patients can be both physically and emotionally demanding. Caregivers often face a multitude of challenges, including assisting with activities of daily living, managing medications, coordinating medical appointments, and coping with the

psychological and emotional stressors that can arise from witnessing a loved one's pain and functional decline(17, 35). These demands can lead to a phenomenon known as "caregiver burden," which encompasses feelings of stress, depression, anxiety, and a sense of being overwhelmed by the caregiving role. Also, caregivers of hip fracture patients may experience disruptions in their own quality of life due to the time and energy devoted to caregiving tasks, which can lead to reduced personal well-being, compromised social lives, and even physical health issues(21, 35).

1.3 Importance of the study:

Caregiver burden and the quality of life of caregivers play pivotal roles in the quality of life and well-being of patients with hip fractures. However, so far, no study has been presented for caregivers of hip fracture patients in Iran. Therefore, this study was conducted with the purpose to identify caregiver burden and quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences. This study is in line with the research priority of the Medical Surgical Nursing Department in the field of patient-centered and family-centered care. The results of this descriptive study can be helpful in designing effective interventions and improving the quality of life of these patients and their caregivers.

1.4 OBJECTIVES OF THE STUDY:

1.4.1 Main objective

Determining the caregiver burden and quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences

1.4.2 specific objectives:

Determining the caregiver burden in people with hip fracture in selected hospitals of Tehran University of Medical Sciences.

Determining the quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences.

Determining the relationship between caregiver burden and quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences.

Determining the relationship between caregiver burden and demographic characteristics in people with hip fracture in selected hospitals of Tehran University of Medical Sciences.

Determining the relationship between quality of life and demographic characteristics in people with hip fracture in selected hospitals of Tehran University of Medical Sciences.

1.5 RESEARCH QUESTIONS:

What is the level of the caregiver burden in people with hip fracture in selected hospitals of Tehran University of Medical Sciences?

What is the level of the quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences?

What is the relationship between caregiver burden and quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences?

What is the relationship between caregiver burden and demographic characteristics in people with hip fracture in selected hospitals of Tehran University of Medical Sciences?

What is the relationship between quality of life and demographic characteristics in people with hip fracture in selected hospitals of Tehran University of Medical Sciences?

1.6 THEORETICAL AND OPERATIONAL DEFINATION:

Caregiver burden:

Theoretical definition: Caregiving burden is a general term to describe the physical, emotional, social and financial costs of caregiving. Caring pressure is defined as the result of the lack of balance between the patient's needs and the caregiver's facilities (29).

Operational definition: Caregiving burden in this research is the score given by caregivers of hip fracture patients from the Caregiving Burden Questionnaire (CBI). This questionnaire has 24 statements and five subscales, which are: time-dependent care burden (questions 1 to 5), evolutionary care burden (questions 6 to 10), physical care burden (questions 11 to 14), social care burden questions 15 to 19). and emotional caregiving burden (questions 20 to 24).

Caregivers' answers will be measured in a 5-item Likert scale (completely false to completely true), in such a way that the samples answer each question in one of the states of completely false (score 1), false (score 2), They choose partially correct (score 3), correct (score 4) and completely correct (score 5). The range of scores obtained from this questionnaire is from 24 to 120.

Quality of life:

Theoretical definition: health-based quality of life refers to the conditions in which the patient feels satisfied in terms of emotional, social and physical performance(15).

Operational definition: The meaning of quality of life in this research is the score that the caregivers of hip fracture patients will get from the sf-36 quality of life questionnaire. To calculate the total score of the questionnaire, the sum of the numbers obtained from each subscale is divided by 8 and the obtained number must be a number between 0-100. The total score is also a sum of all the subscales, which varies between 0 and 100, where 0 is the worst and 100 is the best situation in quality of life. A higher score indicates a better quality of life.

CHAPTER TWO
FRAMEWORK and
LITERATURE REVIEW

2.1 Introduction

This chapter is dedicated to the description and explanation of the theoretical background of the subject of the research as well as the presentation of the results of the research conducted related to the objectives of the current research, inside and outside of Iran. Therefore, the current chapter is divided into two general parts, which are:

• Providing information about the conceptual framework of the research

• Presentation of research findings that have been published by researchers and the author had access to them (review of literature)

2.2 Conceptual Framework

Hip fractures

A hip fracture refers to a break in the femur, the thighbone that extends from the hip joint to the knee. This type of fracture is most common among the elderly, particularly those with osteoporosis, a condition that weakens bones and increases the risk of fractures. Hip fractures are often the result of falls and can lead to significant morbidity and mortality(36) .

Signs and symptoms of a hip fracture may include sudden severe pain in the hip or groin area, an inability to walk or put weight on the affected leg, a visible deformity or shortening of the leg, bruising or swelling around the hip, and an external rotation of the foot at the ankle. These symptoms typically occur immediately after a fall or an impact that causes the fracture(37).

There are several types of hip fractures, which are classified based on their location and the bones involved. The main types include intracapsular fractures, which occur within the hip joint capsule and can be further divided into femoral neck fractures and subcapital fractures, and extracapsular fractures, which occur outside the joint capsule and include intertrochanteric and subtrochanteric fractures(37).

Treatment for a hip fracture depends on the type and severity of the fracture, as well as the patient's overall health and functional status. Surgical intervention is often necessary to stabilize the fracture and promote healing. Common surgical procedures include internal fixation, where metal devices such as screws, plates, or nails are used to hold the broken bones in place, and hip replacement surgery,

which may be recommended for certain types of fractures or in cases where the joint is severely damaged (38, 39). Non-surgical treatment may be considered in rare cases where the patient's health status does not permit surgery. This approach typically involves pain management, bed rest, and possibly traction to align the bones. However, non-surgical treatment is associated with a higher risk of complications and a poorer long-term outcome (39).

Regardless of the treatment approach, rehabilitation is a critical component of recovery from a hip fracture. Physical therapy helps to restore mobility, strength, and function, while occupational therapy focuses on regaining independence in activities of daily living (40). The goal of rehabilitation is to help the patient return to their pre-fracture level of function, although this is not always possible due to the complexity of the injury and individual patient factors(39).

Hip fractures are a significant health concern, particularly among the elderly, due to their association with substantial morbidity and mortality. Prompt diagnosis and appropriate treatment, including surgical stabilization and comprehensive rehabilitation, are essential for optimizing outcomes and reducing the impact of this common injury(7).

The treatment of hip fractures is a critical aspect of orthopedic care, particularly for elderly patients, as timely and appropriate intervention can significantly impact morbidity and mortality rates(36). The primary types of hip fracture treatment include surgical and non-surgical approaches, each with its own indications and potential outcomes(39).

SurgicalTreatment:

Surgical intervention is the preferred treatment for most hip fractures due to the improved outcomes associated with early stabilization of the fracture(41). The main surgical options include:

1. Internal Fixation: This procedure involves the use of metal devices such as screws, plates, rods, or nails to hold the broken bones in place while they heal. Internal fixation is commonly used for certain types of hip fractures, such as femoral neck fractures and some intertrochanteric fractures.
2. Hip Replacement Surgery: Also known as arthroplasty, this procedure is typically recommended for femoral neck fractures in elderly patients or in cases where the joint is severely damaged. There are two main types of hip replacement: total hip replacement, where both the femoral head and the acetabulum are replaced, and hemiarthroplasty, where only the femoral head is replaced.

3. Minimally Invasive Surgery: Advances in surgical techniques have led to the development of minimally invasive approaches for some hip fractures. These techniques aim to reduce soft tissue damage and may lead to faster recovery and reduced hospital stays(42, 43).

Non-SurgicalTreatment:

Non-surgical treatment, also known as conservative management, is less common for hip fractures and is typically reserved for patients who are not suitable candidates for surgery due to significant medical comorbidities or advanced age. Non-surgical options may include:

1. Bed Rest: The patient is advised to avoid weight-bearing on the affected leg to prevent further injury.
2. Traction: This involves the application of a pulling force to the limb to help align the bones. Skin traction or skeletal traction may be used depending on the patient's condition.
3. Pain Management: Medications are used to control pain and make the patient more comfortable.
4. Rehabilitation: Early mobilization and physical therapy are important to prevent complications such as pneumonia and deep vein thrombosis, even in non-surgically treated patients(39, 43).

The choice between surgical and non-surgical treatment is based on several factors, including the type and severity of the fracture, the patient's age and overall health, and the presence of any contraindications to surgery. Surgical treatment is generally associated with better long-term outcomes, including improved mobility and reduced risk of complications such as pressure sores and pulmonary embolism(44, 45).

The treatment of hip fractures is tailored to the individual patient's needs and may involve surgical or non-surgical approaches. Surgical options, including internal fixation and hip replacement, are commonly used to stabilize the fracture and promote healing, while non-surgical management is reserved for specific cases where surgery is not feasible. Regardless of the treatment chosen, rehabilitation plays a crucial role in the recovery process, aiming to restore function and independence to the greatest extent possible(44, 45).

Hip fractures are a significant healthcare concern, particularly among the elderly population, due to their association with substantial morbidity, mortality, and reduced quality of life. These fractures are typically caused by falls and are more common in individuals with osteoporosis, a condition characterized by decreased bone density and strength(44). The incidence of hip fractures increases with age, with a higher prevalence in women compared to men, partly due to the greater prevalence of osteoporosis in women (23).

The consequences of hip fractures are multifaceted and can have a profound impact on the affected individuals and their families. One of the most

immediate and serious problems is the increased risk of mortality in the post-fracture period. Studies have shown that the mortality rate in the first year following a hip fracture can be as high as 30%, with the risk being highest in the first few months. This increased mortality is attributed to a combination of factors, including the trauma of the fracture, the surgical intervention required for treatment, and the pre-existing comorbidities that are more prevalent in the elderly population(36, 46).

In addition to the mortality risk, hip fractures often lead to a decline in functional status and independence. Many individuals experience a loss of mobility and are unable to return to their pre-fracture level of functioning. This can result in a need for long-term care, either in the home with the assistance of family members or professional caregivers, or in institutional settings such as nursing homes. The loss of independence and the need for assistance with activities of daily living can have a significant psychological impact, leading to depression, social isolation, and a reduced quality of life(1, 19).

Pain is another common problem following hip fractures. Despite advances in pain management, many patients report persistent pain that can interfere with their recovery and rehabilitation. Chronic pain can also contribute to the development of other complications, such as reduced mobility, which increases the risk of secondary health issues like pressure ulcers and deep vein thrombosis(23).

The economic burden of hip fractures is substantial, with costs associated with hospitalization, surgery, rehabilitation, and long-term care. These costs are not only a financial strain on the healthcare system but also on individual patients and their families. The indirect costs, such as lost productivity due to the need for family members to provide care, further exacerbate the economic impact of hip fractures(44).

Prevention of hip fractures is a critical aspect of managing this healthcare problem. Strategies include the promotion of healthy lifestyles, such as regular weight-bearing exercise and a balanced diet, as well as the appropriate use of pharmacological interventions to prevent or treat osteoporosis. Additionally, fall prevention programs aimed at identifying and mitigating risk factors for falls can help reduce the incidence of hip fractures(3).

Hip fractures present a complex array of problems that affect individuals, families, and healthcare systems. The challenges associated with these fractures underscore the need for comprehensive approaches to prevention, treatment, and rehabilitation. Ongoing research and the development of new interventions are essential to improving outcomes for patients with hip fractures and alleviating the associated personal and societal burdens(5, 30).

The problems associated with hip fractures in patients include:

1. Pain: Hip fractures can be extremely painful, and managing this pain is a significant concern for patients.
2. Mobility Issues: The fracture can severely limit the patient's ability to walk or move around, leading to a loss of independence and potential need for assistance with daily activities.
3. Surgical Intervention: Many hip fractures require surgical treatment, such as the insertion of pins, screws, or a metal plate to stabilize the bone, or in some cases, a hip replacement.
4. Complications: Patients with hip fractures are at risk of developing complications such as blood clots, infections, pressure sores, and pneumonia, especially if they are immobilized for an extended period.
5. Rehabilitation: After surgery, patients typically need extensive rehabilitation to recover their mobility and strength. This can include physical therapy, occupational therapy, and sometimes the need for a walking aid or other assistive devices.
6. Psychological Impact: The experience of a hip fracture can lead to fear, anxiety, depression, and a loss of confidence due to the sudden change in health status and the challenges of recovery.
7. Increased Mortality: There is an increased risk of mortality in the period following a hip fracture, particularly in the elderly. This is due to a combination of factors, including the trauma of the fracture, surgical intervention, and pre-existing health conditions.
8. Long-Term Care: Some patients may require long-term care either at home with the assistance of family members or professional caregivers, or in a nursing home, depending on their ability to regain independence.
9. Financial Burden: The costs associated with medical treatment, rehabilitation, and potential long-term care can place a significant financial burden on patients and their families.
10. Reduced Quality of Life: The combination of physical limitations, pain, and the need for assistance can lead to a reduced quality of life for patients with hip fractures(38, 39).

Preventing falls and maintaining bone health through exercise, proper nutrition, and, if necessary, medication to treat osteoporosis, are important strategies for reducing the risk of hip fractures in at-risk populations.

Caregivers of Hip fractures patient

Caregivers of hip fracture patients face a unique set of challenges that can significantly impact their physical, emotional, and financial well-being. These challenges are often multifaceted and can vary depending on the caregiver's

relationship to the patient, the severity of the fracture, and the patient's pre-existing health conditions(47).

One of the primary problems faced by caregivers is the physical demand of assisting with activities of daily living (ADLs). Hip fractures can severely limit a patient's mobility, making it difficult for them to perform tasks such as walking, bathing, and dressing without assistance. Caregivers may need to help with these ADLs, which can be physically taxing, especially if the caregiver is also elderly or has their own health issues. Over time, the physical strain can lead to musculoskeletal problems, fatigue, and a higher risk of injury for the caregiver(48).

Emotionally, caregivers may experience significant stress and burden. Witnessing the pain and suffering of a loved one can be distressing, and caregivers may feel overwhelmed by the responsibility of managing complex care needs. The uncertainty surrounding the recovery process and the potential for long-term disability can also contribute to anxiety and depression among caregivers (49). The emotional toll of caregiving can be exacerbated by feelings of isolation, as caregivers may have less time and energy to maintain social relationships(48).

Financially, caregivers may incur substantial costs associated with the care of a hip fracture patient. These costs can include medical expenses not covered by insurance, the cost of home modifications to accommodate wheelchairs or walkers, and expenses related to home healthcare services or nursing home care if the patient requires long-term assistance. Caregivers may also face indirect costs, such as reduced work hours or the need to take unpaid leave, which can lead to a loss of income and increased financial strain (49).

The time commitment required to care for a hip fracture patient can be immense, affecting the caregiver's ability to balance work and personal life. Caregivers may need to adjust their work schedules, take on additional household responsibilities, and manage the patient's rehabilitation and medical appointments. This can lead to role strain, where caregivers struggle to fulfill their various roles effectively, which can result in feelings of guilt, frustration, and resentment(35, 47).

Social support is crucial for caregivers of hip fracture patients, as it can help alleviate some of the burdens they face. However, caregivers may lack adequate support from family, friends, or community services, which can exacerbate feelings of isolation and increase the perceived burden of caregiving (50). Access to caregiver support groups, counseling services, and respite care can be beneficial in providing emotional support and practical advice on managing caregiving responsibilities(21).

Caregivers of hip fracture patients face a range of problems that can affect their overall quality of life. These challenges highlight the need for targeted interventions and support systems to assist caregivers in managing the physical, emotional, and financial demands of their role. Recognizing and addressing the needs of caregivers is essential for improving patient outcomes and ensuring the well-being of those who provide care(49, 50).

Caregiver burden

Caregiver burden is a complex phenomenon that encompasses the physical, emotional, and financial strain experienced by individuals who provide care for family members or friends with chronic illnesses, disabilities, or age-related conditions. This burden can have a profound impact on the caregiver's quality of life, health, and overall well-being(3, 29).

Physical burden often arises from the direct care tasks that caregivers perform, such as helping with mobility, personal hygiene, or managing medical equipment. Over time, these tasks can lead to musculoskeletal problems, fatigue, and a higher risk of injury for the caregiver. The physical demands of caregiving can be particularly challenging for older caregivers or those with their own health issues, potentially leading to a decline in their functional status(3, 51).

Emotional burden is another significant aspect of caregiver burden, characterized by feelings of stress, anxiety, depression, and emotional exhaustion. Caregivers may experience these emotions due to the challenges of managing the care recipient's condition, the uncertainty of the situation, and the impact on their own lives and relationships. The emotional toll can be exacerbated by feelings of isolation, as caregiving responsibilities can limit social interactions and support(52).

Financial burden is also a critical component, as caregiving can lead to significant out-of-pocket expenses, reduced work hours, or the need to take unpaid leave. These financial pressures can create additional stress for caregivers, especially if they are the primary breadwinners or have limited financial resources. The financial burden can also affect the caregiver's retirement savings and long-term financial security(29).

The time commitment required for caregiving can lead to role strain, where caregivers struggle to balance their caregiving responsibilities with other roles, such as employment, parenting, or managing their own health. This can result in feelings of guilt, frustration, and resentment, as caregivers may feel that they are not meeting the expectations of all their roles effectively(29).

Social support is a key factor in mitigating caregiver burden. Caregivers who have access to support from family, friends, or community services may experience less burden than those who lack such support. However, the availability of social support can vary greatly, and caregivers may face barriers to accessing the support they need(53).

Interventions to reduce caregiver burden include respite care services, caregiver education and training, and access to counseling and support groups. These interventions aim to provide caregivers with the resources and support they need to manage the physical, emotional, and financial challenges of caregiving. Additionally, policy initiatives, such as family medical leave policies and caregiver support programs, can help alleviate some of the burdens faced by caregivers(53).

In summary, caregiver burden is a multifaceted issue that affects many aspects of a caregiver's life. Recognizing the challenges faced by caregivers and providing them with comprehensive support is essential for addressing this burden and ensuring the health and well-being of both caregivers and care recipients.

Caregiver burden of Caregivers of Hip fractures patient

Caregiver burden is a multidimensional response experienced by those who provide care for chronically ill, disabled, or aged family members. In the context of caregivers of hip fracture patients, this burden can be particularly acute due to the sudden onset of care needs and the often complex recovery process. Caregiver burden is typically characterized by physical, emotional, and financial stressors that can impact the caregiver's quality of life and well-being(11, 17).

Physically, caregivers of hip fracture patients may experience strain from assisting with activities of daily living (ADLs) and providing mobility support. The physical demands of caregiving can lead to musculoskeletal problems, fatigue, and a higher risk of injury for the caregiver. Over time, the cumulative effect of these physical stressors can take a toll on the caregiver's health, potentially leading to a decline in their own functional status(54).

Emotionally, caregivers may suffer from anxiety, depression, and feelings of being overwhelmed. The emotional burden can stem from witnessing the pain and suffering of the patient, managing the uncertainty of the recovery process, and dealing with the changes in the patient's and their own lifestyle. The emotional toll can be exacerbated by feelings of isolation, as caregivers may have less time and energy to maintain social relationships(52)

Financially, caregivers may face significant costs associated with the care of a hip fracture patient. These can include out-of-pocket medical expenses, the need for home modifications, and the potential loss of income due to reduced work hours or the need to take unpaid leave. The financial burden can be a source of considerable stress, especially if it leads to a strain on the caregiver's economic resources(55).

The time commitment required to care for a hip fracture patient can also contribute to caregiver burden. Caregivers may need to adjust their work schedules, take on additional household responsibilities, and manage the patient's rehabilitation and medical appointments. This can lead to role strain, where caregivers struggle to fulfill their various roles effectively, which can result in feelings of guilt, frustration, and resentment(52).

Social support is a critical factor in mitigating caregiver burden. Caregivers who have access to support from family, friends, or community services may experience less burden than those who lack such support. However, caregivers of hip fracture patients may find it challenging to access adequate support due to the sudden onset of care needs and the potential isolation that comes with being the primary caregiver(50).

Interventions to reduce caregiver burden in the context of hip fracture care can include respite care services, caregiver education and training, and access to counseling and support groups. These interventions aim to provide caregivers with the resources and support they need to manage the physical, emotional, and financial challenges of caregiving(53,54).

Caregiver burden is a significant issue for those caring for hip fracture patients. The physical, emotional, and financial stressors associated with caregiving can have a profound impact on the caregiver's well-being. Recognizing the challenges faced by caregivers and providing them with targeted support and resources is essential for alleviating this burden and ensuring the health and quality of life of both the caregiver and the care recipient(51).

Quality of life

Quality of life (QoL) is a broad concept that encompasses an individual's overall well-being, including their physical, emotional, social, and cognitive functioning, as well as their satisfaction with life. It is a multidimensional construct that goes beyond the absence of disease and includes the ability to perform daily activities, the capacity to engage in social interactions, and the subjective perception of one's position in life in the context of the culture and value systems in which they live(31).

The assessment of QoL has become increasingly important in healthcare, as it provides a more holistic view of an individual's health status than traditional

clinical measures alone. QoL measures can help clinicians and researchers understand the impact of diseases, treatments, and interventions on patients' lives from their own perspective. These measures often include both generic and disease-specific instruments, allowing for comparisons across different populations and conditions(56).

One of the most widely used generic QoL instruments is the Short Form 36 (SF-36), which assesses eight health concepts: physical functioning, role limitations due to physical health problems, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems, and mental health.The SF-36 has been validated in numerous populations and has demonstrated reliability and validity in measuring QoL across different health conditions(31).

Disease-specific QoL instruments, on the other hand, are designed to capture the unique impacts of particular diseases or conditions on QoL. For example, the EORTC QLQ-C30 is a cancer-specific instrument that assesses global health status, physical functioning, role functioning, emotional functioning, cognitive functioning, social functioning, fatigue, pain, nausea and vomiting, dyspnea, appetite loss, insomnia, constipation, diarrhea, and financial difficulties.These instruments are particularly useful for evaluating the effectiveness of treatments and interventions targeted specifically at the condition in question(57).

QoL is influenced by a variety of factors, including but not limited to socioeconomic status, education, social support, and access to healthcare. These factors can interact in complex ways, affecting an individual's ability to cope with illness and maintain or improve their QoL. For instance, higher socioeconomic status is often associated with better QoL due to better access to resources and healthcare services(57).

Improving QoL is a key goal in many healthcare interventions. This can involve managing symptoms, providing psychosocial support, and enhancing access to services that promote independence and social engagement. Patient-centered care, which takes into account the patient's preferences, needs, and values, is crucial for improving QoL. Additionally, policy-level interventions, such as improving healthcare infrastructure and implementing social support programs, can have a significant impact on population-level QoL(57).

QoL is a critical aspect of health and well-being that extends beyond clinical measures to encompass the full range of human experience. Assessing and improving QoL is a complex task that requires a multidimensional approach, taking into account the diverse factors that influence an individual's perception

of their life quality. As such, QoL remains a central concern in healthcare, with ongoing research and interventions aimed at enhancing the lives of individuals across various health conditions and life stages(57).

Quality of life in caregiver of patient with hip fracture

The quality of life (QoL) of caregivers of patients with hip fractures is a critical aspect of the overall well-being of both the caregiver and the care recipient(58, 59). Caregivers of hip fracture patients often face a unique set of challenges that can significantly impact their QoL, including physical strain, emotional distress, and financial burdens.

Physically, caregivers may experience strain from assisting with activities of daily living (ADLs) and providing mobility support. The physical demands of caregiving can lead to musculoskeletal problems, fatigue, and a higher risk of injury for the caregiver(58). Over time, the cumulative effect of these physical stressors can take a toll on the caregiver's health, potentially leading to a decline in their own functional status(56).

Emotionally, caregivers may suffer from anxiety, depression, and feelings of being overwhelmed. The emotional burden can stem from witnessing the pain and suffering of the patient, managing the uncertainty of the recovery process, and dealing with the changes in the patient's and their own lifestyle. The emotional toll can be exacerbated by feelings of isolation, as caregivers may have less time and energy to maintain social relationships(56).

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Social support is a critical factor in mitigating the impact on caregivers' QoL. Caregivers who have access to support from family, friends, or community services may experience less burden than those who lack such support. However, caregivers of hip fracture patients may find it challenging to access

adequate support due to the sudden onset of care needs and the potential isolation that comes with being the primary caregiver(56).

Interventions to improve caregiver QoL in the context of hip fracture care can include respite care services, caregiver education and training, and access to counseling and support groups. These interventions aim to provide caregivers with the resources and support they need to manage the physical, emotional, and financial challenges of caregiving. Additionally, policy initiatives, such as family medical leave policies and caregiver support programs, can help alleviate some of the burdens faced by caregivers, thereby improving their QoL(15, 35).

The QoL of caregivers of patients with hip fractures is influenced by a range of factors, including physical strain, emotional distress, financial burdens, and time commitment. Addressing these challenges through targeted interventions and support systems is essential for improving the well-being of caregivers and ensuring the best possible outcomes for both caregivers and care recipients(56).

2.3 LITRATURE REVIEW:

A literature review was conducted to search for related studies in the database including MEDLINE, PubMed, Google Scholar, Springer, Science Direct , Academic Jihad Scientific Databases (SID), and Magiran. The search was conducted in English and Persian language using the following keywords: “Hip fracture”, “Caregiver burden”, “Quality of life”, “patients” and “Caregivers”. The titles and abstracts of the retrieved articles were read to find related articles to the study topic. Finally, five included articles were chosen as they had the highest relevance to the study’s topic. A summary of the articles was presented as follows:

1. **Alexiou et al (2018)** were conduct study on Quality of life and psychological consequences in elderly patients after a hip fracture in the Department of Orthopaedic Surgery and Musculoskeletal Trauma, Nicosia, Cyprus. The purpose of this study was to evaluate the impact of hip fractures on the quality of life (QoL), health status (HS), functioning, and psychological parameters, and factors influencing the outcome and the appropriate interventions for improvement of elderly patients.

A systematic electronic search of the relevant literature was carried out using the CINAHL, Cochrane, EMBASE, Medline (OvidSP), and PubMed databases spanning the time period from inception to January 2017. Forty-nine randomized controlled trials or prospective cohort studies reporting the QoL and

psychological outcomes were assessed by using standardized questionnaires and assessed various factors affecting their recovery. Patients with a hip fracture who were older than 65 years, were included in the analysis. In the majority of elderly patients, the hip fracture seriously affected physical and mental functioning and exerted a severe impact on their HS and health-related QoL (HRQoL).

Moreover, most of the patients did not return to pre fracture levels of performance regarding both the parameters. The levels of mental, physical, and nutritional status, prior to the fracture, comorbidity, and female gender, in addition to the postoperative pain, complications, and the length of hospital stay, were the factors associated with the outcome. Psychosocial factors and symptoms of depression could increase pain severity and emotional distress.

For the displaced femoral neck fractures, the treatment with total hip arthroplasty or hemiarthroplasty, when compared to the treatment with internal fixation, provided a better functional outcome. Supportive rehabilitation programs, complemented by psychotherapy and nutritional supplementation prior to and after surgery, provided beneficial effects on the HS and the psychosocial dimension of the more debilitated patients' lives. Lack of consensus concerning the most appropriate HRQoL questionnaires to screen and identify those patients with more difficulties in the psychosocial functions, demonstrates the necessity for further research to assess the newer outcome measurement tools, which might improve our understanding for better care of patients with hip fractures.

The findings of the study reveal that hip fractures in elderly patients lead to a substantial decline in their overall quality of life. Physical limitations, loss of independence, and increased dependence on caregivers were among the predominant factors contributing to this decline. Moreover, the research highlights the often overlooked but profound psychological consequences of hip fractures, including depression, anxiety, and a sense of social isolation(10). This is an review study that has examined the quality of life and the mental consequences of hip fractures and is different from the present study. This study has been used to write a problem statement and discussion the present study.

2. Longo et al in (2020) were conducted study on Family Caregiver Strain and Challenges When Caring for Orthopedic Patients in department of orthopaedic and trauma surgery Rome Italy on 16 may 2020 this study was reported following PRISMA statement guidance. Studies were selected, according to inclusion and exclusion criteria, about patient caregiver dyads. For quality assessment, we used the MINORS and the Cochrane Risk of BIAS

assessment tool. The Results was 28 studies were included in the systematic review; in these studies, 3034 dyads were analyzed.

Caregivers were not always able to bear the difficulties of care. An improvement in strain was observed after behavioral interventions from health-care team members; The role of the caregiver can lead to a deterioration of physical, cognitive and mental conditions. The use of behavioral interventions increased quality of life, reducing the strain in caregivers of orthopedic patients. For this reason, it is important to consider the impact that orthopedic disease has on the strain of the caregiver and to address this topic.

The study also indicates that not only the increase in caregivers' stress levels but also the decrease in quality of life was less severe in caregivers who received appropriate behavioral interventions including health care advice, such as medication advice or psychological tips. To improve the quality of health care, stressors should be considered for caregivers due to the high strain, especially in the post-discharge period(11). This study conducted on the Family Caregiver Strain and Challenges When Caring for Orthopedic Patients. This study has been used to write a problem statement and discussion the present study.

3. Ariza-Vega et al, in (2021) were conducted study on Family Caregivers' Experiences with Tele-Rehabilitation for Older Adults with Hip Fracture in the Department of Physiotherapy, University of Granada, 18016 Granada, Spain. On 13 December 2021. In this study the objective was to use semi-structured interviews to explore family caregivers experience with the telerehab program Twenty-one family caregivers were interviewed between three and six months after the older adults completed active hip. One occupational therapist with research and clinical experience, but not involved in the main trial, conducted and transcribed the interviews. They conducted a multi-step content analysis, and two authors completed one coding cycle and two recoding cycles. Results in Family caregivers who enrolled in active hip were satisfied with the program, stated it was manageable to use, and perceived benefits for older adults' functional recovery after hip fracture. They also suggested improvements for the program content, such as more variety with exercises, and increased monitoring by health professionals.

Moreover, Loss of functional independence, decreased social participation, and reduced quality of life are some of the main consequences of hip fractures. Early hospital rehabilitation with follow-up post-discharge can support older

adults' recovery of function. Family caregivers play an essential role in helping older patients to complete activities of daily living (ADL) in the home setting. The sudden and unexpected nature of hip fractures can impact both older adults and family caregivers, who as a result can experience increased stress and burden. As a result, hip fracture is associated with worse overall health status in family caregivers. These factors indicate a need for new post-discharge management strategies to improve older adults function post-hip fracture and reduce caregiver stress(13). This qualitative study conducted on Family Caregivers' Experiences with Tele-Rehabilitation for Older Adults with Hip Fracture. This study has been used to write a problem statement, introduction, and discussion the present study.

4. Chiang MH et al (2022) were conducted study on Prognostic Factors for Mortality, Activity of Daily Living, and Quality of Life in Taiwanese Older Patients within 1 Year Following Hip Fracture Surgery in the Department of Orthopedic Surgery, Wan Fang Hospital Taipei 116, Taiwan this study is enrolling older adults (≥60 years) who had undergone hip fracture surgery in a single medical centre. The comprehensive clinical history of each patient was examined. QoL, ADL, and mortality events were recorded consecutively at 3, 6, and 12 months after operation. The multiple logistic regression model and the generalized estimating equation (GEE) were adopted to identify contributing factors for mortality and postoperative ADL and QoL prognosis, respectively. Results. Among 377 participants with hip fracture, 48 died within 1 year of the index operation. ADL and QoL considerably decreased at 3 months following hip surgery. Old age, high Charlson Comorbidity Index, and American Society of Anaesthesiologists grading were crucial predictors for mortality at the

1-year follow-up. The generalized estimating equation analysis indicated that the length of postoperative follow-up time, serum albumin level, patient cognitive status, and handgrip strength were considerably associated with QoL and ADL recovery prognosis in the Taiwanese older adults following hip fracture. Conclusions. Hip fractures have long-lasting effects on the older adults. Their data imply several prognosis predicting parameters that may assist clinicians in accounting for an individual's personalized risks in order to improve functional outcomes and reduce mortality. The study also discovered that Coronary heart disease, pneumonia, and urinary tract infection are major risk factors for mortality in older adults with hip fracture can considerably impair the QoL and mobility of older adults(14). This study conducted on Prognostic Factors for Mortality, Activity of Daily Living, and Quality of Life in Patients with Hip Fracture. But in the present study, the quality of life and caregiver burden of the patient's caregivers has been investigated. The

challenges and problems of patients with hip fracture are used in the Introduction and Framework of the Research.

5. **Vande et al (2018**) were conducted study on Care-related Quality of Life of informal caregivers of the elderly after a hip fracture. in the Department of Trauma Top Care, Elisabeth-TweeSteden Hospital, Tilburg, The Netherlands on 03 may 2018 The purpose of the study was to determine the nature, intensity and the care-related Quality of Life (CarerQoL) of informal caregivers of elderly patients in the first six months after a hip fracture. In this cross-sectional study, were interviewed the primary informal caregivers of patients with a hip fracture about the informal care provided after one, three or six months following the injury. The CarerQoL of the informal caregivers was measured with the CarerQoL-7D instrument. And In total, 123 primary informal caregivers were included. The CarerQoL-7D score was on average 83.7 (SD 15.0) after one, three and six months, and there were no major differences between the measurement time points. The average amount of informal care provided per patient per week was 39.5 during the first six months. Partners of patients with a hip fracture provided significantly more hours of informal care (β 34.0; 95% CI: 20.9 – 47.1). Female informal caregivers stated a significantly lower level of CarerQoL (β -7.8; 95% CI: -13.3 – -2.3). Female caregivers were 3.0 times more likely to experience relational problems (aOR 3.02; 95% CI 1.08-8.43). Caregivers provided care at 6 months were associated with physical health problems (aOR 2.54; 95% CI 1.05-6.14).

Furthermore, most caregivers must address quickly changing care needs as the care recipients' transition from emergency room to operating room, then to a regular hospital unit, followed by a rehabilitation setting, and then home. Most caregivers take up their role without prior knowledge or experience, and the associated stress may have a significantly negative impact on the caregivers' QoL (15). This cross-sectional study conducted on Care-related Quality of Life of informal caregivers of the elderly after a hip fracture. But in the present study, the quality of life and the caregiver burden of the caregivers of the hip fractures has been investigated. This study has been used to write a problem statement, introduction, and discussion the present study.

Review and critique of studies

A literature review showed that the quality of life of hip fracture patients and their caregivers was impaired. Caregivers also experienced caregiver buden and psychological consequences. However, limited studies have been conducted on caregivers of people with hip fractures. Also, no study has been conducted in

the Iranian community to investigate the quality of life and caregiving stress of caregivers of people with hip fractures.

CHAPTER 3THREE

METHODOLOGY

Introduction

This chapter includes the study design, study setting, sample size, sampling method, inclusion and exclusion criteria, data collection instruments, working method, data analysis method, Ethical considerations, and limitations of the research.

REAEARCH DESIGN AND METHODS:

3.1 study design:

The study was conducted using cross-sectional descriptive-analytical in which the variables of quality of life and caregiver burden and the relationship between them were measured in a group of patients with hip fracture.

3.2 study setting

The study was done in the orthopedic department and clinic of Sina Hospital.

3.3 study population:

The study population included all patients with hip fracture who referred to the selected medical training centers of Tehran University of Medical Sciences in Tehran.

3.4 INCLUSION AND EXCLUTION CRITERIA:

The study inclusion criteria for patient included:

1. patient who Have primary caregiver at home
2. Consciousness and are able to communicated
3. patients who have no cognitive and mental disorders
4. informed consent to participate in the study.

The study inclusion criteria for caregiver included:

1. Caregivers who are been alerted and able to communicate.
2. Who have the ability to speak, read and write in Persian Language
3. Who have the main responsibility in taking care of the patient and are member of the family
4. over 18 years old.
5. Informed consent to participate in the study

Non-entry criteria:

1. Patients with reported depression and other mental disorders
2. Subsequent fractures in patients who have already participated in the study are not considered
3. A patient with cognitive disorders and dependent on alcohol and drugs.

Exclusion criteria:

1. Failure to complete the questionnaire completely (one person was excluded from the study)
2. Unwillingness to continue participating in the study

3.5 Sampling method

Convenient sample method was used

3.6 sample size

The variables of the sample size formula were borrowed from a previous study with a similar aim. Using the standard deviation of a similar study (14, 15) and applying the following formula, also considering the confidence level of 95%, the test power of 80% and the accuracy of 0.25σ, the sample size of 125 people was calculated. Taking into account the possible loss of about 20%, the final sample number of 150 people was determined:

$$n = \frac{(z_{1-\alpha/2} + z_{1-\beta})^2 * (\delta^2)}{d\sigma^2} = \frac{(1.96 + 0.84)^2 * (16)^2}{(0.25 * 16)^2} \; 125$$

3.7 Data collection

The present study was a cross-sectional descriptive-analytical study. The research environment of Sina Hospital and the research community included all patients referred to the orthopedic department of Sinai Hospital with hip fracture in 2024.

After consulting with the professor of statistics, the desired sample size for this research was calculated to be 150 people. In order to carry out a sampling of 150 patients from the mentioned patients of Sina Hospital, who meet the criteria for inclusion in the study and are hospitalized, or who visited the clinic two weeks after the surgery, in the form of Convenient sampling (in the form of a telephone call or in person) be selected and entered into the study.

Sina Hospital is the orthopedic center of Tehran University of Medical Sciences and has two orthopedic departments for men and women, each with 30 beds. Patients with hip fractures are admitted to this department, with an average of 10 patients admitted with hip fractures each week.

First, a brief description of how to conduct the study was presented to the sample. Also, the reasons and confidentiality of the information were explained to the qualified people to enter the study and informed consent form was obtained from the people to participate in the study.

The data collection tool in this research included three questionnaires: demographic information, caregiver pressure questionnaire (CBI) and quality of life questionnaire (SF-36).

Then the information was analyzed with SPSS16 software and using descriptive and inferential statistics. In order to comply with the ethical principles of the study, all people participating in the study were assured that their information will remain confidential with the researcher.

3.8 Instruments:

In this research three-part instrument were used.

3.8.1 socio-demographic tool:

The first part included a demographic questionnaire including questions on the caregiver's and the patient's demographic data, such as the caregiver's age, gender, marital status, education level, job, type of family relationship with the patient, financial status, having a known physical illness, and the size of their family as well as the duration of the patient's disease, duration of using regular treatment, duration after hip fracture, having active insurance coverage, and the type of insurance coverage.

3.8.2: The Farsi version of the CBI were used as the second part of the study instrument.

The CBI is composed of 24 items in five subscales, including time-dependence burden (items 1 to 5), developmental burden (items 6 to 10), physical burden (items 11 to 14), social burden (items 15 to 19), and emotional burden (items 20 to 24). All items are responded on a five-point Likert scale ranging from 1 (= never) to 5 (= nearly always). The total score is between 24 and 120; higher scores indicate more burden. Moreover, the scores between 24 and 39, 40 and 71, and 72 and 120 are categorized as low, moderate, or severe burden, respectively (29). The validity and reliability of this scale were confirmed through content validity and internal consistency (Cronbach's alpha = 0.90) (18,30). Furthermore, in a preliminary study on the thirty caregivers of patients with hip fracture, the Cronbach α were calculated(Cronbach's alpha = 0.88). However, the data of preliminary study was not used in the final analysis.

3.8.3 The Farsi version of the short-form quality of life (SF-36) questionnaire were used as the Third part of the study instrument.

Quality of life (SF-36) questionnaire is a universal standard criteria. Its shortened form contains 36 items divided into three levels: (1) Questions, (2) eight scales with any combination of 2–10 questions as physical health (10), bodily pain (2), general health (6), physical role functioning (4), vitality (3), emotional role functioning (3), social functioning (2), mental health (6), and (3) two summary scales forming physical health components (physical function, bodily pain, general health, and physical role functioning), and mental health components (vitality, emotional role functioning, social functioning, and mental health). The mean scale is calculated separately, and the results of each scale vary from 0 to 100. The lowest score on this questionnaire is 0, and maximum score is 100. Zero is the worst case, and the higher scores reflect the better quality of life (31). This scale was translated to Farsi by Montazeri et al. and its

validity and reliability were confirmed through content validity and internal consistency method (0.70–0.85); also, its Cronbach α has been reported in the range of 0.70–0.90(60). Furthermore, in a preliminary study on the thirty caregivers of patients with hip fracture, the Cronbach α were calculated (Cronbach's alpha = 0.8). However, the data of preliminary study was not used in the final analysis.

3.9 Data analysis

After collecting the data and entering it into spss software version 16, the data were analyzed using descriptive statistics methods such as calculating the mean, variance and standard deviation and inferential statistics such as chi-square test and Pearson's correlation coefficient were analyzed.

3.10 Ethical consideration:

1. Before starting the data collection, approval and permissions was obtained from the Joint Committee of Ethics in Research of school of Nursing and Midwifery and Rehabilitation at Tehran University of Medical Sciences (TUMS), Iran (IR.TUMS.FNM.REC.1403.003).

2**.**Obtaining a letter of recommendation from the vice president of research of the university.

3.Introducing the researcher and the purpose of the research to the people participating in the study.

4. Explaining the goals and nature of the research and answering the questions of the research units in the context of the current research.

5.People are free to participate in the study.

6. The samples were informed about the aim and method of the study. They were ensured with regard to confidentiality and anonymity throughout the study process. They were informed that they can withdraw from the study at any time without being penalized.

7. Assuring the research units about the absence of danger and physical, psychological and emotional harm. Because of non-interventional nature of this study, there were not any safety concern about samples.

8.Ensuring the research samples that their information were kept confidential and that the names and surnames of the study units were not be mentioned and they were given a code.

9. Presenting the results of the research to the participants and officials if they wish.

10.Adherence to honesty and justice in sampling, collecting and analyzing data.

11.Mention the names of all members of the research group in the article.

12.Compliance with ethical principles in the use of sources and research used in research.

3.11 Limitation of the study:

This study was performed in a limited population in the hospitals of Tehran University of Medical Sciences, therefore, The psychological-emotional conditions of the participants in this research while answering the questionnaires was among the other limitations of this research, the researcher try as much as possible and completed the questionnaires in calming conditions without stressing and at the chosen time and place of participation.

Another limitation was that most patients did not return to the hospital one to two years after the hip fracture, and most of the samples were caregivers of patients with acute hip fractures. However, the researcher attempted to include individuals who experienced a hip fracture several years later, and a limited number of patients who returned several years later with long-term complications of the fracture were included in the study. The average duration of fracture was 123 days. So we tried to had a variety of data in this field.

Chapter 4
Results

Introduction:

Determining the caregiver burden and quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences2024 was the general purpose.

In this section, the individual characteristics of the research units have been examined first, and then, in order to achieve the objectives of the research, the related tables and the results of the statistical tests of each have been reported. The outputs of the software were summarized in the form of 5 tables. in such a way that:

- ✓ **Table 1. Demographic characteristics of participates, (N = 149).**
- ✓ **Table 2. Reliability, central tendency, and variability of scales in the study.**
- ✓ **Table 3. Pearson correlations between factors(CBI and SF-36).**
- ✓ **Table 4. Relationship between CBI and participant variables by multiple linear regression.**
- ✓ **Table 5. Relationship between SF-36 and participant variables by multiple linear regression.**

Table 1. Demographic characteristics of participates, (N = 149).				
Variable		**N (%)**	**Mean (SD)**	**Min. – Max.**
Age (year)			41.32 (11.82)	17 - 84
Sex	Male	71 (47.7%)		
	Female	78 (52.3%)		
Relationship	Wife	27 (18.1%)		
	Son	35 (29.5%)		
	Sister/Brother	44 (23.5%)		

Table 1. Demographic characteristics of participates, (N = 149).

	Mom/Dad	24 (16.1%)		
	Nurse	19 (12.8%)		
Marital status	Single	40 (26.8%)		
	Married	109 (73.2%)		
Education level	Reading & Writing	12 (8.1%)		
	Sikl	26 (17.4%)		
	Diploma	59 (39.6%)		
	BSc.	38 (25.5%)		
	Postgraduate	14 (9.4%)		
Patient's ability	Very much	3 (2.0%)		
	Much	21 (14.1%)		
	A little	65 (43.6%)		
	Very little	60 (40.3%)		
Hospitalization (day)			10.40 (30.57)	2 - 365
Fracture duration (day)			123.01 (684.09)	1 - 6208
Surgical history	Yes	69 (46.3%)		
	No	80 (53.7%)		
SD: Standard deviation				

Results

The study included 149 patients with hip fracture with a mean age of 41.32 years (SD = 11.82, range 17-84). The sample was 47.7% male and 52.3% female. Participants' relationships to the patient included 18.1% wives, 29.5% sons, 23.5% siblings, 16.1% parents, and 12.8% nurses. Marital status showed 26.8% single and 73.2% married. Educational level was 8.1% with literacy, 17.4% with sikl, 39.6% with diploma, 25.5% with BSc and 9.4% with postgraduate degree. Perceived ability was 2.0% "very much," 14.1% "much," 43.6% "a little" and 40.3% "very little" Mean hospital stay was 10.40 days (SD = 30.57, range 2-365) and mean duration of fracture was 123.01 days (SD = 684.09, range 1-6208). Surgical history was reported by 46.3% of participants, while 53.7% had none (**Table 1**).

Table 1 provides an overview of the demographic and clinical characteristics of the study sample, which includes 149 patients with hip fracture. Here's a detailed explanation of the findings presented in the table:

1. **Age Distribution**:
    - **Mean Age**: 41.32 years

- **Standard Deviation (SD)**: 11.82
- **Range**: 17-84 years
- **Interpretation**: The average age of the patients in the study is 41.32 years, with a wide spread of ages as indicated by the standard deviation of 11.82. The youngest patient is 17 years old, and the oldest is 84, showing a diverse age range within the sample.

2. **Gender Distribution**:
   - **Male**: 47.7%
   - **Female**: 52.3%
   - **Interpretation**: Slightly more than half of the patients in the study are female, with a relatively even distribution of males and females.
3. **Relationship to the Patient**:
   - **Wives**: 18.1%
   - **Sons**: 29.5%
   - **Siblings**: 23.5%
   - **Parents**: 16.1%
   - **Nurses**: 12.8%
   - **Interpretation**: The majority of caregivers are close family members, with sons being the most common relationship to the patient. A notable portion of the caregivers are also nurses, indicating professional caregiving in addition to family care.
4. **Marital Status**:
   - **Single**: 26.8%
   - **Married**: 73.2%
   - **Interpretation**: The majority of the caregivers are married, which may reflect the typical caregiving dynamics where spouses often take on significant caregiving roles.
5. **Educational Level**:
   - **Literacy**: 8.1%

- **Sikl**: 17.4%
- **Diploma**: 39.6%
- **BSc**: 25.5%
- **Postgraduate Degree**: 9.4%
- **Interpretation**: The educational level varies among caregivers, with the most common level being a diploma (39.6%). There is a significant portion of caregivers with a BSc (25.5%) and a smaller but notable percentage with postgraduate degrees (9.4%).

6. **Perceived Ability to Work of patient**:
   - **Very Much**: 2.0%
   - **Much**: 14.1%
   - **A Little**: 43.6%
   - **Very Little**: 40.3%
   - **Interpretation**: The majority of caregivers perceive their ability to work of patients as limited, with nearly half (40.3%) reporting they can work "very little." This suggests that caregiving responsibilities may be impacting their work capacity.
7. **Hospital Stay**:
   - **Mean**: 10.40 days
   - **SD**: 30.57
   - **Range**: 2-365 days
   - **Interpretation**: On average, patients stayed in the hospital for just over 10 days, but there is a large variation in length of stay, as indicated by the high standard deviation and the wide range from 2 to 365 days.
8. **Duration of Fracture**:
   - **Mean**: 123.01 days
   - **SD**: 684.09
   - **Range**: 1-6208 days
   - **Interpretation**: The average duration from the occurrence of the fracture to the time of the study is approximately 123 days, but

there is an extremely high variability in this duration, with the standard deviation being much larger than the mean. The range is also very wide, indicating that some fractures were very recent, while others were over 16 years prior to the study.

9. **Surgical History**:
    - **Yes**: 46.3%
    - **No**: 53.7%
    - **Interpretation**: Slightly less than half of the patients have a history of surgery, suggesting that surgical intervention is common but not universal among patients with hip fractures in this sample.

Overall, Table 1 provides a comprehensive snapshot of the study population, highlighting the diversity in age, gender, relationships, marital status, education, perceived work ability, hospital stay, fracture duration, and surgical history among caregivers of patients with hip fractures.

Table 2. Reliability, central tendency, and variability of scales in the study.

Factor			**Mean**	**SD**	**Min.**	**Max.**
CBI-24			66.15	17.14	28	112
CBI.Time			19.66	4.26	7	25
CBI.Evolutionary			14.95	5.75	5	25
CBI.Physical			11.47	4.01	4	20
CBI.Social			10.51	3.98	5	25
CBI.Emotional			9.57	4.09	5	24
SF-36			61.90	17.15	21.81	94.44
SF.Physical.functioning			74.17	29.58	0	100
SF.Role.functioning.physical			46.81	40.61	0	100
SF.Role.functioning.emotional			49.06	39.59	0	100
SF.Energy.fatigue			59.03	18.09	20	100
SF.Emotional.well_being			66.68	14.44	36	100
SF.Social.functioning			56.21	21.78	0	100
SF.Pain			65.87	27.33	0	100
SF.General.Health			56.95	18.80	15	90
SF.Health.change			53.69	25.40	0	100

Alpha: Cronbach's Alpha
SD: Standard deviation

Table 2 show the reliability, central tendency, and variability of various scales using a sample of participants. Each scale was evaluated based on the number of items, Cronbach's Alpha (α) as a measure of reliability, mean, standard deviation (SD), as well as the minimum (Min.) and maximum (Max.) values. The results indicate high reliability for most scales, as evidenced by Cronbach's Alpha values above 0.7, with CBI-24 exhibiting the highest reliability (α = 0.924) followed closely by SF-36 (α = 0.908) and SF.Physical.Functioning (α = 0.942), suggesting internal consistency among the items within each scale.

Table 2 presents a comprehensive analysis of the reliability, central tendency, and variability of various scales used in the study to assess caregiver burden and quality of life among caregivers of hip fracture patients. The table provides valuable insights into the psychometric properties of these scales, which are essential for interpreting the study's findings and their implications for caregiver support and intervention.

The Caregiver Burden Inventory-24 (CBI-24) and its subscales demonstrate high reliability, with Cronbach's Alpha (α) values ranging from 0.728 to 0.924. The high reliability of the CBI-24 (α = 0.924) indicates that the scale is internally consistent and accurately measures the overall caregiver burden. The subscales also show good reliability, with the CBI.Time (α = 0.869), CBI.Evolutionary (α = 0.883), and CBI.Emotional (α = 0.810) subscales having particularly strong α values. These findings suggest that the CBI-24 and its subscales are reliable tools for assessing different dimensions of caregiver burden, such as time-dependent burden, developmental burden, physical burden, social burden, and emotional burden.

The SF-36 scale, used to measure health-related quality of life, also exhibits high reliability with an α value of 0.908. This confirms that the SF-36 is a consistent and reliable instrument for assessing quality of life in this population. The subscales of the SF-36 show varying degrees of reliability, with the SF.Physical.Functioning subscale having the highest reliability (α = 0.942), indicating that it is a particularly robust measure of physical functioning. The SF.Role.Functioning.Physical (α = 0.828) and SF.Role.Functioning.Emotional (α = 0.705) subscales also demonstrate good reliability, suggesting that they are effective in measuring role limitations due to physical and emotional problems, respectively.

It is noteworthy that some subscales of the SF-36 have lower α values, such as SF.Emotional.Well_Being (α = 0.526) and SF.Social.Functioning (α = 0.597). These lower values may indicate that the items within these subscales are less internally consistent or that the constructs they are measuring are more complex and may not be fully captured by the current items. This suggests that further

refinement of these subscales or the development of additional items may be necessary to improve their reliability.

The central tendency and variability statistics provided in Table 2 also offer important information. The mean scores and standard deviations (SD) for each scale and subscale give an indication of the average level of burden or quality of life and the dispersion of scores among caregivers. The minimum (Min.) and maximum (Max.) values provide the range of scores, showing the extent of the burden or quality of life experienced by caregivers.

The analysis presented in Table 2 supports the use of the CBI-24 and SF-36 scales for assessing caregiver burden and quality of life in the context of hip fracture caregiving. The high reliability of these scales and their subscales (with the exception of a few SF-36 subscales) indicates that they are suitable for measuring the constructs of interest. However, the lower reliability of certain SF-36 subscales suggests that these areas may require further investigation and potential scale refinement to ensure accurate measurement. The findings from these scales can inform the development of targeted interventions to support caregivers and improve their quality of life.

The data provided in the table represent the central tendency and variability of scores for the Caregiver Burden Inventory-24 (CBI-24) and the Short Form 36 (SF-36) health survey, along with their respective subscales. These statistics give us insights into the average level of caregiver burden and quality of life, as well as the spread of these measures among the study participants.

The key points from the table:

1. **CBI-24**: The mean score of 66.15 with a standard deviation (SD) of 17.14 indicates that there is a moderate level of caregiver burden in the sample, with a wide range of scores from a minimum of 28 to a maximum of 112. This suggests that the experience of caregiver burden varies significantly among the caregivers.

2. **CBI Subscales**:
    - **CBI.Time**: A mean score of 19.66 (SD = 4.26) suggests that time-related caregiver burden is relatively high, with scores ranging from 7 to 25.

    - **CBI.Evolutionary**: The mean score is 14.95 (SD = 5.75), indicating a moderate level of burden related to the developmental aspects of caregiving, with scores from 5 to 25.

- **CBI.Physical**: A mean of 11.47 (SD = 4.01) reflects a moderate level of physical burden, with scores between 4 and 20.

- **CBI.Social**: The mean score of 10.51 (SD = 3.98) suggests a moderate level of social burden, with scores ranging from 5 to 25.

- **CBI.Emotional**: A mean of 9.57 (SD = 4.09) indicates that emotional burden is also present, with scores from 5 to 24.

3. **SF-36**: The mean score of 61.90 (SD = 17.15) suggests that the overall quality of life is moderate, with scores ranging from 21.81 to 94.44.

4. **SF-36 Subscales**:
   - **SF.Physical.Functioning**: A high mean score of 74.17 (SD = 29.58) indicates that physical functioning is relatively good, with scores from 0 to 100.

   - **SF.Role.Functioning.Physical**: The mean score is 46.81 (SD = 40.61), suggesting that role limitations due to physical health are present, with scores ranging from 0 to 100.

   - **SF.Role.Functioning.Emotional**: A mean of 49.06 (SD = 39.59) indicates that emotional problems also affect role functioning, with scores from 0 to 100.

   - **SF.Energy.Fatigue**: The mean score is 59.03 (SD = 18.09), suggesting moderate levels of energy and fatigue, with scores from 20 to 100.

   - **SF.Emotional.Well_Being**: A mean of 66.68 (SD = 14.44) reflects moderate emotional well-being, with scores from 36 to 100.

   - **SF.Social.Functioning**: The mean score is 56.21 (SD = 21.78), indicating moderate social functioning, with scores from 0 to 100.

   - **SF.Pain**: A mean of 65.87 (SD = 27.33) suggests that pain is moderately controlled, with scores from 0 to 100.

- **SF.General.Health**: The mean score is 56.95 (SD = 18.80), indicating moderate general health perceptions, with scores from 15 to 90.

- **SF.Health.Change**: A mean of 53.69 (SD = 25.40) reflects moderate perceived changes in health, with scores from 0 to 100.

The data suggest that while caregivers experience a range of burdens, they also report varying degrees of quality of life. The variability in scores highlights the heterogeneity of the caregiving experience and the need for tailored support and interventions to address the specific needs of caregivers.

Table 3. Pearson correlations between factors.

Factors	CBI_24	CBI.Time	CBI.Evolutionary	CBI.Physical	CBI.Social	CBI.Emotional	SF_36	SF.Physical.functioning	SF.Role.functioning.physical	SF.Role.functioning.emotional	SF.Energy.fatigue	SF.Emotional.well_being	SF.Social.functioning	SF.Pain	SF.General.Health
CBI_24	1														
CBI.Time	.703**	1													
CBI.Evolutionary	.880**	.617**	1												
CBI.Physical	.793**	.432**	.629**	1											

CBI.Social	.732**	.281**	.533**	.529**	1										
CBI.Emotional	.730**	.338**	.503**	.490**	.532**	1									
SF_36	-.525**	-.451**	-.386**	-.447**	-.391**	-.367**	1								
SF.Physical.functioning	-.335**	-.315**	-.247**	-.263**	-.231**	-.243**	.795**	1							
SF.Role.functioning.physical	-.459**	-.443**	-.314**	-.436**	-.304**	-.296**	.794**	.497**	1						
SF.Role.functioning.emotional	-.314**	-.374**	-.235**	-.236**	-.139	-.229**	.671**	.378**	.681**	1					
SF.Energy.fatigue	-.347**	-.224**	-.287**	-.242**	-.353**	-.237**	.355**	.027	.152	.110	1				
SF.Emotional.well_being	-.084	-.024	-.021	.011	-.219**	-.094	.279**	.012	.034	-.013	.659**	1			
SF.Social.functioning	-.457**	-.317**	-.387**	-.397**	-.403**	-.257**	.566**	.284**	.424**	.386**	.158	.001	1		
SF.Pain	-.359**	-.190*	-.285**	-.332**	-.324**	-.265**	.645**	.490**	.413**	.324**	.058	.103	.570**	1	
SF.General.Health	-.350**	-.206*	-.246**	-.401**	-.245**	-.274**	.618**	.238**	.396**	.285**	.414**	.413**	.545**	.498**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The Pearson correlation analysis revealed significant correlations between the various factors. The overall Caregiver Burden Index (CBI_24) showed strong positive correlations with its sub-areas: Time ($r = .703$, $p < .01$), Evolutionary ($r = .880$, $p < .01$), Physical ($r = .793$, $p < .01$), Social ($r = .732$, $p < .01$), and Emotional ($r = .730$, $p < .01$). Conversely, the CBI_24 correlated negatively with the SF-36 total quality of life measure ($r = -.525$, $p < .01$) and its subdomains, suggesting that higher caregiver burden is associated with lower quality of life. Specifically, CBI_24 correlated negatively with SF.Physical.Functioning ($r = -.335$, $p < .01$), SF.Role.Functioning. Physical ($r = -.459$, $p < .01$), SF.Role.Functioning.Emotional ($r = -.314$, $p < .01$), SF.Energy.Fatigue ($r = -.347$, $p < .01$), SF.Social.Functioning ($r = -.457$, $p < .01$), SF.Pain ($r = -.359$, $p < .01$) and SF.General.Health ($r = -.350$, $p < .01$). The

subdomains of the CBI also showed significant correlations with each other and with the SF-36 subdomains, highlighting the relationship between caregiver burden and quality of life. Specifically, higher scores on the CBI subdomains were consistently associated with lower scores on the SF-36 subdomains, highlighting the inverse relationship between caregiver burden and quality of life(**Table3).**

The findings from the Pearson correlation analysis you've described suggest that there is a significant relationship between the overall Caregiver Burden Index (CBI_24) and its sub-areas, as well as an inverse relationship between the CBI_24 and the SF-36 total quality of life measure and its subdomains. Let's break down these findings in more detail:

Correlation within CBI_24 Sub-areas:

The overall CBI_24 score has strong positive correlations with its sub-areas, indicating that as the burden in one sub-area increases, the overall burden tends to increase as well.

The strongest correlation is with the Evolutionary sub-area ($r = .880$, $p < .01$), suggesting that changes over time in the caregiving situation have a profound impact on the overall caregiver burden.

The Physical sub-area also has a strong correlation ($r = .793$, $p < .01$), indicating that the physical demands of caregiving contribute significantly to the overall burden.

The Time ($r = .703$, $p < .01$), Social ($r = .732$, $p < .01$), and Emotional ($r = .730$, $p < .01$) sub-areas also show strong positive correlations, indicating that these aspects of caregiving are closely related to the overall caregiver burden.

Inverse Correlation with SF-36 Quality of Life Measure:

The CBI_24 has a moderate negative correlation with the SF-36 total quality of life measure ($r = -.525$, $p < .01$), indicating that as caregiver burden increases, the caregiver's quality of life tends to decrease.

This inverse relationship is also observed in the correlations between the CBI_24 and the SF-36 subdomains, such as Physical Functioning, Role Functioning (Physical and Emotional), Energy/Fatigue, Social Functioning, Pain, and General Health.

The strength of these negative correlations varies, with Physical Functioning ($r = -.335$, $p < .01$) and Role Functioning Physical ($r = -.459$, $p < .01$) showing moderate correlations, while others like Role Functioning Emotional ($r = -.314$,

p < .01) and General Health (r = -.350, p < .01) show slightly weaker correlations.

Inter-correlation of CBI and SF-36 Subdomains:

The significant correlations between the CBI subdomains and the SF-36 subdomains highlight the multifaceted impact of caregiver burden on quality of life.

For example, higher scores on the CBI Physical sub-area are likely associated with lower scores on the SF-36 Physical Functioning subdomain, indicating that the physical demands of caregiving can impair the caregiver's own physical health and functioning.

Similarly, higher scores on the CBI Emotional sub-area are likely associated with lower scores on the SF-36 Role Functioning Emotional subdomain, suggesting that emotional strain from caregiving can affect the caregiver's emotional well-being and ability to perform daily activities.

In summary, the Pearson correlation analysis reveals that caregiver burden, as measured by the CBI_24 and its sub-areas, is significantly and inversely related to the quality of life of caregivers, as measured by the SF-36 and its subdomains. This indicates that interventions aimed at reducing caregiver burden could potentially improve the quality of life for caregivers.

Table 4. Relationship between CBI and participant variables by multiple linear regression.

Variable					95.0% CI for B	
	B	**SE**	**Beta**	***P*-value**	**Lower**	**Upper**
(Constant)	37.720	13.742		.007	10.535	64.905
Age	.327	.138	.225	.019	.053	.600
Sex=Male (Ref)	0	-	-	-	-	-
Sex=Female	2.655	2.617	.078	.312	-2.522	7.833
relationship=Wife (Ref)	0	-	-	-	-	-
relationship=Son	6.701	3.889	.166	.087	-.992	14.395
relationship=Sister/Brother	-.160	4.025	-.004	.968	-8.122	7.803
relationship=Mom/Dad	4.519	4.434	.097	.310	-4.253	13.292
relationship=Nurse	-3.907	4.872	-.076	.424	-13.545	5.731
Marital status=Single (Ref)	0	-	-	-	-	-
Marital status=Married	-4.110	3.402	-.107	.229	-10.840	2.619

Education=Reading & Writing (Ref)	0	-	-	-	-	-
Education=Sikl	4.012	5.833	.089	.493	-7.526	15.551
Education=Diploma	3.352	5.440	.096	.539	-7.409	14.113
Education=BSc	-5.762	5.827	-.147	.325	-17.290	5.765
Education=Postgraduate	-10.116	6.485	-.173	.121	-22.945	2.713
W.A=very much (Ref)	0	-	-	-	-	-
W.A=much	11.978	9.408	.244	.205	-6.634	30.589
W.A=a little	15.849	9.136	.460	.085	-2.223	33.921
W.A=very little	22.486	9.291	.646	.017	4.105	40.866
Hospitalization	.046	.043	.083	.280	-.038	.131
Fracture.duration	.005	.002	.192	.012	.001	.009
Surgical.History=Yes (Ref)	0	-	-	-	-	-
Surgical.History=No	-1.357	2.657	-.040	.610	-6.613	3.898
a. Dependent Variable: CBI_24 **SE:** Standard error **CI:** Confidence interval **B:** Unstandardized Coefficients **Beta:** Standardized Coefficients **Ref:** reference level						

The multiple linear regression analysis revealed significant relationships between certain variables and the Caregiver Burden Index (CBI) (**Table 4**). Age was positively associated with the CBI (B = 0.327, SE = 0.138, p = 0.019), suggesting that older participants experience higher caregiver burden. Similarly, longer fracture duration was positively associated with CBI (B = 0.005, SE = 0.002, p = 0.012). In addition, participants who reported being able to work "very little" had significantly higher CBI scores than participants who were able to work "very much" (B = 22.486, SE = 9.291, p = 0.017). However, several variables showed no significant associations with the CBI. Gender, relationship status, marital status, education level, hospitalizations, and surgical history were not significantly associated with CBI.

Table 4 presents the results of a multiple linear regression analysis, which is a statistical method used to examine the relationship between multiple independent variables and a dependent variable. In this case, the dependent variable is the Caregiver Burden Index (CBI), and the independent variables include age, fracture duration, ability to work, gender, relationship status, marital status, education level, hospitalizations, and surgical history**. Analysis the key findings from the table:**

1. **Age and Caregiver Burden**:
    - **Association**: Age is positively associated with the CBI.
    - **Coefficient (B)**: 0.327
    - **Standard Error (SE)**: 0.138

- **p-value**: 0.019
- **Interpretation**: For each additional year of age, the CBI score is expected to increase by 0.327, on average, holding all other variables constant. This suggests that older participants tend to experience a higher level of caregiver burden.

2. **Fracture Duration and Caregiver Burden**:
    - **Association**: Longer fracture duration is positively associated with the CBI.
    - **Coefficient (B)**: 0.005
    - **Standard Error (SE)**: 0.002
    - **p-value**: 0.012
    - **Interpretation**: For each additional unit of time (presumably days or months, depending on the study's measurement) since the fracture, the CBI score is expected to increase by 0.005, on average, holding all other variables constant. This indicates that caregiver burden may increase as the duration of the care recipient's fracture extends.
3. **Ability to Work of patient and Caregiver Burden**:
    - **Association**: Patients who reported being able to work "very little" had significantly higher CBI scores than those who were able to work "very much."
    - **Coefficient (B)**: 22.486
    - **Standard Error (SE)**: 9.291
    - **p-value**: 0.017
    - **Interpretation**: Compared to patients who were able to work "very much," those who were able to work "very little" caregivers had an average increase of 22.486 in their CBI score. This suggests that the ability to work of patients is inversely related to caregiver burden, with reduced work capacity being associated with higher burden.
4. **No Significant Associations**:
    - **Variables**: Gender, relationship status, marital status, education level, hospitalizations, and surgical history.

- **Interpretation**: These variables were not significantly associated with the CBI. This means that within the context of this study, variations in these factors did not lead to predictable changes in caregiver burden as measured by the CBI.

Table 4 highlights that older age, longer fracture duration, and reduced ability to work are associated with higher levels of caregiver burden, as measured by the CBI. Conversely, factors such as gender, relationship status, marital status, education level, hospitalizations, and surgical history did not show a significant relationship with caregiver burden in this analysis.

Table 5. Relationship between SF-36 and participant variables by multiple linear regression.

Variable					95.0% CI for B	
	B	**SE**	**Beta**	***P*-value**	**Lower**	**Upper**
(Constant)	74.146	14.288		.000	45.880	102.412
Age	-.084	.144	-.058	.561	-.368	.200
Sex=Male (Ref)	0	-	-	-	-	-
Sex=Female	-1.370	2.721	-.040	.616	-6.753	4.014
relationship=Wife (Ref)	0	-	-	-	-	-
relationship=Son	-5.321	4.044	-.132	.190	-13.321	2.678
relationship=Sister/Brother	-.917	4.185	-.024	.827	-9.196	7.362
relationship=Mom/Dad	-9.280	4.611	-.200	.046	-18.401	-.159
relationship=Nurse	6.932	5.066	.135	.174	-3.089	16.954
Marital status=Single (Ref)	0	-	-	-	-	-

Marital status=Married	-3.921	3.537	-.102	.270	-10.918	3.076
Education=Reading & Writing (Ref)	0	-	-	-	-	-
Education=Sikl	8.645	6.065	.192	.156	-3.352	20.643
Education=Diploma	11.251	5.656	.322	.049	.062	22.440
Education=BSc	17.540	6.059	.447	.004	5.554	29.526
Education=Postgraduate	27.545	6.743	.470	<.001	14.207	40.884
W.A=very much (Ref)	0	-	-	-	-	-
W.A=much	-2.615	9.782	-.053	.790	-21.966	16.736
W.A=a little	-2.861	9.499	-.083	.764	-21.651	15.930
W.A=very little	-9.938	9.661	-.285	.305	-29.050	9.173
Hospitalization	-.018	.044	-.033	.681	-.106	.070
Fracture.duration	-.004	.002	-.163	.038	-.008	.000
Surgical.History=Yes (Ref)	0	-	-	-	-	-
Surgical.History=No	-2.928	2.762	-.085	.291	-8.393	2.536
a. Dependent Variable: SF-36 **SE:** Standard error **CI:** Confidence interval **B:** Unstandardized Coefficients **Beta:** Standardized Coefficients **Ref:** reference level						

The multiple linear regression analysis for the SF-36 revealed significant relationships with several participant variables (**Table 5**). Higher educational attainment was positively associated with SF-36 scores, with significant effects observed for participants with a Diploma (B = 11.251, SE = 5.656, p = 0.049), BSc (B = 17.540, SE = 6.059, p = 0.004) and postgraduate education (B = 27.545, SE = 6.743, p < 0.001), compared with participants with literacy skills. In addition, relationship status "mother/father" was significantly associated with lower SF-36 scores (B = -9.280, SE = 4.611, p = 0.046). Fracture duration was negatively related to SF-36 scores (B = -0.004, SE = 0.002, p = 0.038), suggesting that longer fracture duration was associated with lower quality of life.

However, several variables, including age, gender, highest relationship status, marital status, highest education level, work ability categories, hospitalization days, and surgical history, were not significantly associated with SF-36 scores.

Table 5 from the multiple linear regression analysis presents the relationships between various participant variables and the SF-36 scores, which is a measure of quality of life. Here's a detailed explanation of the significant findings and those that were not significant:

1. **Significant Associations**:

- **Higher Educational Attainment**:
  - **Diploma**: Participants with a Diploma had significantly higher SF-36 scores compared to those with literacy skills (B = 11.251, SE = 5.656, p = 0.049). This suggests that having a Diploma is associated with a better quality of life.
  - **BSc**: Participants with a BSc also had significantly higher SF-36 scores (B = 17.540, SE = 6.059, p = 0.004), indicating an even stronger positive association between having a Bachelor's degree and quality of life.
  - **Postgraduate Education**: The strongest positive association was observed for participants with postgraduate education (B = 27.545, SE = 6.743, p < 0.001), suggesting that higher educational attainment is linked to higher quality of life as measured by the SF-36.

- **Relationship Status "Mother/Father"**:
  - Being a mother or father to the patient was associated with lower SF-36 scores (B = -9.280, SE = 4.611, p = 0.046). This indicates that parents caring for a patient with a hip fracture may experience a lower quality of life.

- **Fracture Duration**:
  - Longer fracture duration was associated with lower SF-36 scores (B = -0.004, SE = 0.002, p = 0.038). This suggests that the longer the time since the fracture occurred, the lower the quality of life for the caregiver.

2. **Non-Significant Associations**:

   - **Age, Gender, Highest Relationship Status, Marital Status, Highest Education Level, Work Ability Categories, Hospitalization Days, and Surgical History**:

     - These variables were not significantly associated with SF-36 scores. This means that within the context of this study, variations in these factors did not lead to predictable changes in quality of life as measured by the SF-36.

Table 5 highlights that higher educational attainment, being a mother or father to the patient, and longer fracture duration are significantly associated with the SF-36 quality of life scores. In contrast, factors such as age, gender, marital status, and surgical history did not show a significant relationship with quality of life in this analysis.

Chapter 5

Discussion and Conclusion

5 Introduction

In this chapter, research findings have been analyzed based on research objectives and questions, and it consists of four parts of discussion and analysis of findings, conclusion, application of findings and suggestions for further research.

5.1 Discussion

The data suggest that caregivers of hip fracture patients experience a moderate level of burden, with time demands and developmental aspects of caregiving being particularly challenging. While caregivers generally report good physical functioning, they also experience limitations in their roles due to physical and

emotional health issues. The moderate scores on various SF-36 subscales indicate that caregivers' quality of life is affected across multiple domains, including energy and fatigue, emotional well-being, social functioning, pain, and general health perceptions.

The variability in scores highlights the heterogeneity of the caregiving experience and underscores the need for personalized support and interventions. Caregivers may require assistance in managing their time, coping with the developmental aspects of caregiving, and addressing physical and emotional health challenges to improve their overall quality of life. Additionally, the findings emphasize the importance of considering the caregiver's perspective when planning care for hip fracture patients, as the caregiver's well-being can impact the quality of care provided to the patient**.**

The demographic characteristics of the participants in this study, as presented in Table 1, provide a snapshot of the caregivers of hip fracture patients included in the research. The mean age of the caregivers is 41.32 years, with a wide age range from 17 to 84 years, indicating that caregiving for hip fracture patients spans multiple generations. This is consistent with the literature that suggests caregiving roles can be assumed by individuals across different age groups, depending on family structures and cultural norms (21).

The gender distribution is relatively balanced, with 47.7% male and 52.3% female caregivers. This contrasts with some studies that have found a higher prevalence of female caregivers, particularly in spousal and adult child caregiving relationships(35). The relatively equal gender distribution in this study may reflect the specific context of hip fracture caregiving or the cultural background of the study population.

The variety of relationships between caregivers and patients is noteworthy, with the largest proportion being siblings (23.5%) and sons (29.5%). This is somewhat different from typical caregiving scenarios where spouses and daughters are often the primary caregivers(61). The inclusion of nurses (12.8%) as caregivers is also unique and may indicate a mixed-methods approach to caregiving that includes both family members and professional caregivers.

The majority of caregivers are married (73.2%), which is consistent with the literature suggesting that marital status can influence caregiving responsibilities, with married individuals often taking on caregiving roles(13, 47).

The educational level of the caregivers varies, with the largest proportion holding a diploma (39.6%). This distribution reflects the general educational attainment in the population from which the sample was drawn and may have implications for the caregivers' ability to navigate the healthcare system and manage the complexities of caregiving(13, 21).

The perceived ability of the patient to work is an interesting variable, with the majority reporting being able to work "a little" (43.6%) or "very little" (40.3%). This suggests that increased caregiving responsibilities may be impacting the caregivers' employment status or work capacity, a finding that is supported by research showing that caregiving can lead to reduced work hours, productivity losses, and even withdrawal from the labor force(62).

The mean hospital stay of 10.40 days and the mean duration of fracture of 123.01 days provide insights into the acute and post-acute phases of care for hip fracture patients. These figures are within the ranges reported in studies on hip fracture recovery, which have shown that the duration of care can be substantial and may extend beyond the initial hospitalization(62).

The surgical history reported by 46.3% of the participants indicates that a significant portion of the hip fracture patients in this study underwent surgical intervention. This is consistent with clinical guidelines that recommend surgical treatment for many hip fractures to improve outcomes and reduce disability(45).

In comparison with other studies, the demographic characteristics of the participants in this study highlight the diversity of caregivers for hip fracture patients. The findings underscore the need for supportive interventions and policies that consider the varied backgrounds and challenges faced by caregivers. Additionally, the impact of caregiving on work ability and the duration of caregiving responsibilities are important considerations for the development of comprehensive caregiver support programs.

Table 2 presents the reliability, central tendency, and variability of scales used in the study, including the Caregiver Burden Inventory-24 (CBI-24) and the Short Form 36 (SF-36) health survey, along with their respective subscales. The table provides the mean, standard deviation (SD), minimum, and maximum scores for each scale, as well as the Cronbach's Alpha (α) values as a measure of reliability.

The CBI-24, which measures caregiver burden, has a high reliability with an α value of 0.924. This indicates that the items within the CBI-24 are internally consistent and measure the construct of caregiver burden reliably. The mean score for the CBI-24 is 66.15, with a standard deviation of 17.14, suggesting a moderate level of burden among caregivers, and a wide range of scores from 28 to 112, indicating variability in caregiving experiences.

The SF-36, which assesses quality of life, also demonstrates high reliability with an α value of 0.908. This suggests that the SF-36 items are internally consistent and effectively measure the construct of quality of life. The mean score for the SF-36 is 61.90, with a standard deviation of 17.15, indicating a

moderate level of quality of life among participants, with scores ranging from 21.81 to 94.44, reflecting diverse experiences.

The subscales of both the CBI-24 and SF-36 show varying degrees of central tendency and variability, with some subscales having higher means and others showing greater variability. For example, the SF.Physical.Functioning subscale has the highest Cronbach's Alpha ($\alpha = 0.942$), indicating excellent reliability, and a mean score of 74.17, suggesting that participants generally rate their physical functioning as good.

In comparison with other studies, the high reliability of the CBI-24 and SF-36, as indicated by their Cronbach's Alpha values, is consistent with the literature. These scales are widely used in research and have been validated in various populations, demonstrating their robustness and applicability in measuring caregiver burden and quality of life.

The findings from Table 2 emphasize the importance of using reliable and validated scales in research to ensure accurate measurement of constructs. The variability in scores across different subscales also highlights the complexity of caregiver burden and quality of life, suggesting that interventions and support systems should be tailored to address the specific needs of caregivers and improve their overall well-being.

The mean score of 66.15 (SD = 17.14) on the CBI-24 suggests that caregivers, on average, experience a moderate level of burden. The wide range of scores (from 28 to 112) indicates that there is significant variability in the caregiving experience, with some caregivers facing a high level of burden while others report lower levels. The subscale scores provide further insight into the specific areas of burden. For example, the higher mean scores on CBI.Time (19.66) and CBI.Evolutionary (14.95) suggest that time demands and the developmental aspects of caregiving are particularly burdensome. The lower mean scores on CBI.Physical (11.47), CBI.Social (10.51), and CBI.Emotional (9.57) may indicate that, while these aspects are still burdensome, they are less so than time and developmental demands. However, the variability in scores (SDs) shows that there is a range of experiences among caregivers.

The finding that caregivers of patients with hip fracture experience a moderate level of burden is consistent with the literature on caregiver burden in the context of caregiving for individuals with physical disabilities or chronic health conditions. Several recent studies have explored the burden faced by caregivers of patients with orthopedic conditions, including hip fractures, and have reported similar levels of burden.

For instance, a study by Longo et al. (2020) conducted a systematic review of family caregiver strain and challenges when caring for orthopedic patients. The

review included 28 studies and found that caregivers often struggled with the difficulties of care, with an improvement in strain observed after behavioral interventions from healthcare team members. The study concluded that the role of the caregiver can lead to a deterioration of physical, cognitive, and mental conditions, and that behavioral interventions can enhance quality of life and reduce strain, especially in the post-discharge period(11).

Another study by Ariza-Vega et al. (2021) focused on family caregivers' experiences with tele-rehabilitation for older adults with hip fracture. The study reported that family caregivers were satisfied with the program, found it manageable to use, and perceived benefits for older adults' functional recovery after hip fracture. However, they also suggested improvements for the program content, such as more variety with exercises and increased monitoring by health professionals. This suggests that while caregivers are willing to engage in supportive interventions, they also experience challenges that contribute to their burden)(49).

Chiang MH et al. (2022) investigated prognostic factors for mortality, activity of daily living, and quality of life in Taiwanese older patients within one year following hip fracture surgery. The study found that ADL and QoL considerably decreased at 3 months following hip surgery. Old age, high Charlson Comorbidity Index, and American Society of Anesthesiologists grading were crucial predictors for mortality at the 1-year follow-up. The study also identified that the length of postoperative follow-up time, serum albumin level, patient cognitive status, and handgrip strength were considerably associated with QoL and ADL recovery prognosis in the Taiwanese older adults following hip fracture. These factors imply several prognosis predicting parameters that may assist clinicians in accounting for an individual's personalized risks in order to improve functional outcomes and reduce mortality(14).

In comparison with these studies, the current finding that caregivers experience a moderate level of burden aligns with the broader understanding that caregiving for individuals with hip fractures can be physically and emotionally demanding. The studies collectively highlight the need for comprehensive support systems, including behavioral interventions, tele-rehabilitation programs, and personalized risk assessments, to alleviate caregiver burden and improve patient outcomes.

It is important to note that while the level of burden may be moderate on average, there is significant variability in caregiver experiences. Some caregivers may face a high level of burden, which can have detrimental effects on their physical and mental health. Therefore, interventions should be tailored to the individual needs of caregivers and should be flexible enough to adapt to the changing demands of caregiving over time.

Moderate level of burden experienced by caregivers of hip fracture patients is a well-documented phenomenon in recent studies(21, 49, 62). Addressing this burden requires a multifaceted approach that includes supportive interventions, educational resources, and personalized care plans to ensure that caregivers are equipped to manage the challenges of caregiving while maintaining their own well-being.

The mean score of 61.90 (SD = 17.15) on the SF-36 indicates that the overall quality of life for caregivers is moderate, with a broad range of scores (from 21.81 to 94.44) reflecting diverse experiences. The SF.Physical. Functioning subscale has a high mean score of 74.17 (SD = 29.58), suggesting that caregivers generally rate their physical functioning as good, although there is considerable variation. The SF.Role.Functioning. Physical and SF.Role. Functioning. Emotional subscales have lower mean scores (46.81 and 49.06, respectively), indicating that role limitations due to physical and emotional health are more prevalent among caregivers. The SF. Energy. Fatigue, SF. Emotional.Well_Being, SF.Social. Functioning, SF. Pain, and SF.General. Health subscales show moderate levels of functioning and well-being, with scores ranging from 56.21 to 66.68, and significant variability (SDs from 14.44 to 29.58). The SF.Health. Change subscale has a mean score of 53.69 (SD = 25.40), suggesting that caregivers perceive their health as changing moderately over time, with a wide range of experiences.

The findings from the SF-36 health survey in the context of caregivers for hip fracture patients reveal a moderate overall quality of life, with considerable variability in scores indicating diverse experiences among caregivers. This is in line with recent studies that have explored the quality of life in caregivers of patients with similar conditions(15, 56).

For example, a study by Vande et al. (2018) investigated the care-related quality of life of informal caregivers of the elderly after a hip fracture. The study used the CarerQoL-7D instrument and found that the average score was 83.7 (SD = 15.0) at one, three, and six months post-fracture, suggesting a relatively high level of caregiver quality of life. However, the study also noted that female caregivers reported a lower level of CarerQoL and were more likely to experience relational problems and physical health issues, which is consistent with the variability observed in the SF-36 scores(15).
The high mean score on the SF. Physical. Functioning subscale in the current study suggests that caregivers generally rate their physical functioning as good, which is an important aspect of their overall quality of life. This finding is supported by research that has shown that caregivers often prioritize the health and well-being of the care recipient over their own, sometimes at the expense of

their physical health. The considerable variation in scores, however, indicates that there are caregivers who may be experiencing significant physical limitations(35, 63).

The lower mean scores on the SF. Role. Functioning. Physical and SF. Role. Functioning. Emotional subscales suggest that role limitations due to physical and emotional health are more prevalent among caregivers. This is a common theme in caregiving literature, as the demands of caregiving can interfere with work, social activities, and other roles(61). A study found that caregiver burden was associated with reduced participation in social activities and increased isolation, which may contribute to these role limitations(63).

The moderate scores on subscales such as SF. Energy. Fatigue, SF. Emotional. Well Being, SF.Social.Functioning, SF.Pain, and SF.General.Health reflect the complex interplay of factors that contribute to caregiver quality of life. These findings are consistent with the literature that has documented the multifaceted nature of caregiver burden, including emotional distress, social isolation, and physical health challenges(21).

The SF.Health.Change subscale, with a mean score of 53.69, indicates that caregivers perceive their health as changing moderately over time. This perception of change may be influenced by the dynamic nature of caregiving, where the health of the care recipient can fluctuate, leading to varying levels of caregiver stress and health impacts(11).

In comparison with recent studies, the findings from the SF-36 survey in this study contribute to the understanding that caregivers of hip fracture patients experience a range of quality of life outcomes. While some aspects, such as physical functioning, may be relatively well-preserved, other areas like role functioning and emotional well-being can be significantly affected. These findings underscore the need for targeted interventions to support caregivers and improve their quality of life, which in turn can enhance the care they provide to patients.

The Caregiver Burden Index (CBI_24)(29) and the SF-36 quality of life measure(31) are two different tools used to assess the impact of caregiving on caregivers. The CBI_24 specifically measures the level of burden experienced by caregivers, while the SF-36 assesses the caregiver's overall quality of life. The relationship between the CBI_24 and the SF-36 in caregivers can be understood as follows:

1. **Inverse Correlation**: There is an inverse correlation between the CBI_24 and the SF-36, which means that as the level of caregiver burden

increases (as measured by the CBI_24), the quality of life of the caregiver tends to decrease (as measured by the SF-36). This inverse relationship suggests that caregiver burden has a negative impact on various aspects of the caregiver's life, including physical health, emotional well-being, social functioning, and overall quality of life.

2. **Multifaceted Impact**: The CBI_24 has sub-areas such as Time, Evolutionary, Physical, Social, and Emotional burden. These sub-areas are also inversely correlated with the subdomains of the SF-36, which include Physical Functioning, Role Functioning (Physical and Emotional), Energy/Fatigue, Social Functioning, Pain, and General Health. This indicates that the burden in specific areas of caregiving (e.g., physical burden) is associated with declines in corresponding aspects of quality of life (e.g., physical health and functioning).
3. **Implications for Intervention**: The inverse relationship between the CBI_24 and the SF-36 highlights the potential for interventions that target caregiver burden to improve the quality of life for caregivers. By addressing the specific areas of burden identified by the CBI_24, such as providing respite care to alleviate time burden or offering counseling to support emotional well-being, caregivers may experience improvements in their physical health, emotional well-being, and overall quality of life as measured by the SF-36.

The CBI_24 provides a detailed look at the burden experienced by caregivers, while the SF-36 offers a comprehensive assessment of their quality of life. The inverse correlation between these two measures underscores the significant impact of caregiver burden on the well-being of caregivers and points to the need for targeted interventions to support caregivers and improve their quality of life.

The findings from the Pearson correlation analysis in Table 3 provide a clear picture of the relationship between caregiver burden, as measured by the Caregiver Burden Index (CBI_24) and its subscales, and quality of life, as assessed by the SF-36 and its subdomains. The strong positive correlations between the CBI_24 and its subscales (Time, Evolutionary, Physical, Social, and Emotional) indicate that these aspects of caregiver burden are closely related and likely contribute to the overall burden experienced by caregivers.

The negative correlations between the CBI_24 and the SF-36 total score, as well as its subdomains (Physical Functioning, Role Functioning Physical, Role Functioning Emotional, Energy Fatigue, Social Functioning, Pain, and General Health), suggest that as caregiver burden increases, the quality of life for caregivers tends to decrease. This inverse relationship is consistent with the broader literature on caregiver burden and quality of life.

Several studies have reported similar findings(64-66). For instance, a study by Srivastava, et al. (2016) found a significant negative correlation between caregiver burden and quality of life among caregivers of patients with dementia(64). Similarly, a study by Caro et al. (2018) reported a significant inverse relationship between caregiver burden and health-related quality of life in caregivers of stroke survivors(67). These studies, along with others, support the notion that caregiver burden can have a detrimental impact on various aspects of caregivers' quality of life(68).

The correlations between the CBI subdomains and the SF-36 subdomains provide further insights into the specific areas of quality of life that are most affected by caregiver burden. For example, the strong negative correlation between the CBI_24 and SF.Physical.Functioning suggests that caregiver burden may have a significant impact on caregivers' physical health and ability to perform daily activities. This finding is in line with research that has shown that caregiving can lead to physical health declines due to the demands and stress of caregiving(11).

The negative correlation between the CBI_24 and SF.Role.Functioning.Physical, as well as SF.Role.Functioning.Emotional, indicates that caregiver burden may also interfere with caregivers' ability to fulfill their roles in society, whether due to physical limitations or emotional strain. This is consistent with the literature that has documented the role strain experienced by caregivers, which can lead to difficulties in maintaining employment, social relationships, and other responsibilities(17).

The correlation between the CBI_24 and SF.Energy.Fatigue suggests that caregiver burden may contribute to feelings of fatigue and reduced energy levels among caregivers, which is a common finding in caregiving research(3)

The negative correlations between the CBI_24 and SF.Social.Functioning, SF.Pain, and SF.General.Health further highlight the multifaceted impact of caregiver burden on quality of life, affecting social interactions, pain management, and overall health perceptions(47).

The findings from the Pearson correlation analysis are consistent with previous studies that have explored the relationship between caregiver burden and quality of life. The inverse correlations between the CBI_24 and the SF-36 total score and its subdomains underscore the significant impact of caregiver burden on various aspects of caregivers' quality of life. These findings emphasize the need for interventions and support systems to help alleviate caregiver burden and improve the quality of life for caregivers of hip fracture patients and other caregiving populations.

The multiple linear regression analysis presented in Table 4 provides insights into the factors associated with caregiver burden, as measured by the Caregiver Burden Index (CBI_24), among caregivers of hip fracture patients. The findings highlight the importance of considering individual characteristics and the context of caregiving when assessing caregiver burden.

The positive association between age and CBI_24 suggests that older caregivers may experience higher levels of burden. This finding is consistent with previous research that has shown that older caregivers may face greater physical and emotional challenges due to their own age-related health issues and the increased likelihood of providing care to a spouse or an elderly parent(35, 47).The physical demands of caregiving for a hip fracture patient, in particular, may be more taxing for older caregivers.

The relationship between fracture duration and CBI_24 indicates that caregivers who have been providing care for a longer period since the fracture occurred report higher levels of burden. This finding underscores the cumulative effect of caregiving over time, which can lead to increased stress and fatigue(13, 54). The prolonged recovery process associated with hip fractures may exacerbate this effect, as caregivers may need to provide support for extended periods.

The significant difference in CBI_24 scores among participants based on their perceived ability to work is an important finding. Caregivers who reported being able to work "very little" had significantly higher CBI scores compared to those who felt they could work "very much." This suggests that caregivers who perceive a greater impact on their work capacity may experience higher levels of burden. This could be due to the financial strain, loss of productivity, or work-family conflict that can arise when caregiving responsibilities interfere with employment(13, 50).

The lack of significant associations between CBI_24 and variables such as gender, relationship status, marital status, education level, hospitalizations, and surgical history is noteworthy. These findings contrast with some previous studies that have found these factors to be related to caregiver burden. For example, female caregivers have often been reported to experience higher levels of burden and spousal caregivers may face different challenges compared to adult children caregivers(15, 49, 62).The absence of significant findings in this study may be due to differences in the sample characteristics, the nature of the caregiving situation, or the specific context of caring for a hip fracture patient.

In comparison with other studies, the findings from this regression analysis contribute to the understanding that caregiver burden is a complex phenomenon influenced by a variety of factors. While some factors, such as age and fracture duration, are consistent predictors of caregiver burden, others may play a more nuanced role depending on the caregiving context. Future research should

explore these relationships further, considering the potential moderating or mediating effects of other variables not included in this analysis. Additionally, interventions aimed at reducing caregiver burden should be tailored to address the specific needs of caregivers, taking into account the factors that are most predictive of burden in different populations.

The multiple linear regression analysis presented in Table 5 provides insights into the factors associated with quality of life, as measured by the SF-36, among caregivers of hip fracture patients. The findings highlight the potential influence of educational attainment, relationship status, and fracture duration on caregivers' quality of life.

The positive association between higher educational attainment and SF-36 scores suggests that caregivers with higher levels of education may experience better quality of life. This finding is consistent with the broader literature that has shown education to be a protective factor for health and well-being(56). Higher education may be associated with better access to resources, more effective coping strategies, and potentially less stressful caregiving situations due to better socioeconomic conditions (51, 52).

The significant association between being a mother or father to the care recipient and lower SF-36 scores may reflect the unique challenges faced by caregivers in these roles. Adult children caring for their parents may experience role strain, emotional distress, and physical health challenges due to the reversal of caregiving roles and the potential for intergenerational health issues(15). This finding underscores the importance of considering the caregiver-care recipient relationship when assessing quality of life.

The negative relationship between fracture duration and SF-36 scores indicates that longer periods of caregiving for a hip fracture patient are associated with decreased quality of life. This is in line with previous research that has shown a decline in caregiver quality of life over time due to the cumulative effects of caregiving stress and burden(58, 65, 67).The prolonged recovery process and potential for complications associated with hip fractures may exacerbate this trend.

The lack of significant associations between SF-36 scores and variables such as age, gender, marital status, work ability categories, hospitalization days, and surgical history is noteworthy. These findings contrast with some studies that have identified these factors as predictors of quality of life in caregivers(13, 57). The absence of significant findings in this study may be due to differences in the sample characteristics, the nature of the caregiving situation, or the specific context of caring for a hip fracture patient.

In comparison with other studies, the findings from this regression analysis contribute to the understanding that quality of life among caregivers is influenced by a range of factors, including socioeconomic status, caregiver-care recipient relationship, and the duration of caregiving. The significant impact of educational attainment on quality of life highlights the potential benefits of interventions that address the socioeconomic needs of caregivers. Additionally, the findings suggest that caregivers who are parents of the care recipient may require targeted support to manage the unique stressors associated with this caregiving role.

Future research should explore these relationships further, considering the potential moderating or mediating effects of other variables not included in this analysis. Interventions aimed at improving caregiver quality of life should be tailored to address the specific needs of caregivers, taking into account the factors that are most predictive of quality of life in different populations.

5.2 Conclusion:

The findings from this study reveal that caregivers of hip fracture patients bear a moderate level of burden, with significant challenges related to time management and the developmental aspects of caregiving. Despite reporting relatively good physical health, caregivers experience limitations in their roles due to physical and emotional health issues. The impact on caregivers' quality of life is evident across multiple domains, including energy and fatigue, emotional well-being, social functioning, pain, and general health perceptions. The heterogeneity in caregiving experiences underscores the necessity for personalized support and interventions to address the diverse needs of caregivers. These results highlight the critical importance of considering the caregiver's perspective in the care of hip fracture patients, as caregiver well-being is intrinsically linked to the quality of care provided to the patients.
An inverse relationship was observed between caregiver burden and quality of life, indicating that as caregiver burden increases, the quality of life for caregivers tends to decrease. These findings highlight the significant impact of caregiving responsibilities on the well-being of caregivers and underscore the need for supportive interventions to alleviate caregiver burden and enhance the quality of life for this population.

5.3 Application for Clinical Research:

The insights gained from this study can be applied to clinical research by informing the development of interventions aimed at reducing caregiver burden and improving caregiver quality of life. These interventions could include

psychoeducational programs, respite care services, and caregiver support groups.

5.3.1Application for Education

In teaching, these findings can be integrated into healthcare professional education to sensitize future practitioners to the challenges faced by caregivers and to emphasize the importance of a holistic approach that includes caregiver needs in patient care plans. Also, attention to caregivers and patients' families should be included in nursing education content.

5.3.2Application for nursing management

Based on the results of the study, managers and policymakers should have programs and interventions such as the following to reduce the burden of caregiving on caregivers:

1. **Supportive Interventions:** Develop and implement programs to alleviate caregiver burden, such as respite care, counseling services, and support groups.
2. **Personalized Care Plans:** Tailor interventions to meet the specific needs of caregivers, considering the variability in their experiences and challenges.
3. **Collaborative Care:** Foster collaboration between healthcare providers, caregivers, and patients to ensure comprehensive and effective care.
4. **Resource Allocation:**

Allocate resources to support caregivers, including financial assistance, access to healthcare services, and community resources.

Develop partnerships with local organizations and agencies to provide additional support and services for caregivers.

5. **Policy Advocacy:**

Advocate for policies that recognize and support the role of caregivers in the healthcare system.

5.3.3Application for clinical nursing

Based on the results of this study, it is recommended that nurses in the clinical setting have plans for the health and preparedness of caregivers while providing care to patients.

Education and Training: Provide caregivers with education and training on managing caregiving responsibilities, including time management and coping strategies.

Holistic Assessment: Incorporate regular assessments of caregiver burden and quality of life into patient care plans to identify and address issues promptly.

5.4 Suggestions for Future Research:

Future research should focus on identifying specific interventions that are most effective in reducing caregiver burden and improving quality of life for caregivers of hip fracture patients. Longitudinal studies could provide a better understanding of how caregiver burden and quality of life evolve over time and in response to different interventions. Additionally, research could explore the effectiveness of tailored support programs that address the unique needs of caregivers based on their individual scores on measures like the SF-36. Furthermore, investigating the relationship between caregiver well-being and patient outcomes could provide additional evidence for the importance of including caregiver support in comprehensive care plans for hip fracture patients. Qualitative studies will also help to understand the experiences of caregivers.

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Attachments

1. Questionnaires

مشخصات فردی

- جنسیت : مرد☐ زن☐
- سن : ..... سال
- نسبت شما با بیمار :
- تعداد افراد خانواده:
- محل زندگی بیمار:
- وضعیت تآهل : مجرد☐ متاهل☐
- میزان تحصیلات : خواندن و نوشتن☐ سیکل☐ دیپلم☐ کارشناسی☐ کارشناسی ارشد و بالاتر☐
- شغل شما چیست؟
- سطح تحصیلات مراقب
- وضعیت اقتصادی:
- آیا بیمار تحت پوشش بیمه است ؟ بله خیر
- توان بیمار شما در انجام کارهای شخصی خود چقدر است؟

خیلی زیاد☐ زیاد☐ متوسط☐ کم☐ خیلی کم☐

- چه مدت است که بیمار شما مبتلا بستری است؟ ..... روز
- چه مدت از زمان تشخیص شکستگی گذشته است؟ ..... روز
- آیا سابقه عمل جراحی داشته اید؟ بله☐ خیر☐

پرسشنامه فشار مراقبتی

پاسخگوی محترم: عبـارات زیر در مورد احساسات و تجربیات شما در مورد مراقبت از عضو بیمار خانواده تان می‌باشد. لطفا با دقت عبارات را مطالعه فرمائید و گزینه ای که به شرایط شما نزدیکتر است را علامت بزنید.

		کاملا نادرست	نادرست	تا حدی	درست	کاملا درست
1	بیمار من در انجام اکثر فعالیت های روزانه به کمکم احتیاج دارد .					
2	بیمارم به من وابسته است .					
3	مجبورم دائما بیمارم را تحت نظر داشته باشم .					
4	مجبورم در بسیاری از فعالیت های اصلی به بیمارم کمک کنم .					
5	حتی یک دقیقه هم از کار های مراقبتی بیمارم خلاصی ندارم.					
6	احساس می کنم به علت مراقبت از بیمارم از زندگی خودم دور افتاده ام .					

7	آرزو می کنم ای کاش می توانستم از این موقعیت خلاص شوم .					
8	به خاطر مراقبت از بیمارم، زندگی اجتماعی من آسیب دیده است .					
9	به علت مراقبت از بیمارم از نظر عاطفی احساس خستگی می کنم .					
10	انتظار داشتم زندگی ام در این لحظه متفاوت تر از هم اکنون بود.					
11	من به علت مراقبت از بیمارم اندازه کافی نمی خوابم.					
12	به علت مراقبت از بیمارم به سلامت من لطمه خورده است .					
13	مراقبت از بیمار مرا از نظر جسمی بیمار کرده است.					
14	از نظر جسمی خسته شده ام.					
15	من نتوانستم با اعضای خانواده ام همراه باشم و به این عادت کرده ام.					
16	اعضای خانواده ام قدر مراقبت های من را نمی دانند.					
17	به علت مراقبت از بیمارم دچار مشکلات زناشوئی شده ام .					
18	نمی توانم کارهایی که به عهده من گذاشته شده است را به خوبی انجام دهم .					
19	از خویشاوندانم رنجیده ام، چون با اینکه می توانند کمکم کنند، اما این کار را نمی کنند.					
20	رفتار های عضو بیمار خانواده برایم ایجاد مزاحمت می کند.					
21	من به علت بیمارم ، احساس خجالت می کنم.					
22	از فرد بیمارم رنجیده خاطرم.					
23	وقتی دوستان زیادی دورو برم باشند احساس ناراحتی می کنم.					
24	به خاطر مراقبت وارتباط با فرد بیمارم، عصبانی هستم .					

پرسشنامه کیفیت زندگی(SF-36)

این پرسشنامه نظر شما را در مورد سلامتی خودتان بررسی می‌کند. این اطلاعات کمک می‌کند تا بتوان به ثبت احساسات شما و اینکه شما تا چه حدی توانایی انجام کارهای روزانه خود را دارید، اقدام کرد.

به هر سوال به همان شکلی که توضیح داده شده است، پاسخ دهید. اگر مطمئن نیستید که چگونه به یک سوال پاسخ دهید، لطفا بهترین پاسخ ممکن را انتخاب کنید.

1- بطور کلی، سلامتی خود را چگونه توصیف می‌نمایید. (یکی را مشخص نمایید)

1. عالی 2. بسیار خوب 3. خوب 4. متوسط 5. بد

2- در مقایسه با سال گذشته به طور کلی سلامت خود را در حال حاضر چگونه ارزیابی می‌کنید. (یکی را مشخص نمایید)

1. بسیار بهتر از سال گذشته است
2. کمی بهتر از سال گذشته است
3. تقریبا مشابه سال گذشته است
4. کمی بدتر از سال گذشته است
5. بسیار بدتر از سال گذشته است

3- موارد زیر شامل فعالیت‌هایی است که شما احتمالا طی یک روز عادی انجام می‌دهید. آیا وضعیت سلامتی شما در حال حاضر این فعالیت‌ها را محدود کرده است؟ اگر چنین است به چه میزان. (از هر ردیف یک عدد را مشخص نمایید)

فعالیت‌ها	بله بسیار محدود شده است	بله کمی محدود شده است	خیر اصلا محدود نشده است
الف- فعالیت‌های سنگین مانند دویدن، بلند کردن اجسام سنگین، شرکت در ورزش‌های قدرتی			
ب- فعالیت‌های متوسط مثل حرکت دادن یک میز، جابجایی جاروبرقی، انجام ورزش‌های سبک			
ج- بلند کردن یا حمل خواروبار منزل			
د- بالا رفتن از چند راه پله			
ه- بالا رفتن از یک راه پله			
و- دولا شدن، زانو زدن یا خم شدن			
ز- راه رفتن برای بیش از یک کیلومتر			
ح- راه رفتن برای بیش از چند کوچه			
ط- راه رفتن برای بیش از یک کوچه			
ی- حمام کردن یا پوشیدن لباس			

4- آیا طی 4 هفته گذشته در کار یا دیگر فعالیت‌های روزمره، به علت وضعیت سلامتی جسمانی خود یکی از مشکلات زیر را داشته‌اید؟ (از هر ردیف یک عدد را مشخص نمایید)

	بله	خیر
الف- کاهش مدت زمانی که صرف کار یا سایر فعالیت‌ها نموده‌اید		
ب- به کمتر از آنچه تمایل داشته‌اید، دست یافته‌اید.		
ج- در انجام کارهایی خاص یا سایر فعالیت‌ها محدودیت داشته‌اید.		
د- در انجام کار یا سایر فعالیت‌ها دچار مشکل شده‌اید (مثلا نیازمند تلاش بیشتری بوده‌اید).		

5- آیا طی 4 هفته گذشته در کار و یا سایر فعالیت‌های روزمره، به علت مشکلات روحی خود یکی از مشکلات زیر را داشته اید؟ (از هر ردیف یک عدد را مشخص نمایید)

	بله	خیر
الف- کاهش مدت رمانی که صرف کار یا سایر فعالیت‌ها نموده‌اید.		
ب- به کمتر از آنچه تمایل داشته‌اید دست یافته‌اید.		
ج- کار یا سایر فعالیت‌های خود را با دقت معمول انجام نداده‌اید؟		

6- طی 4 هفته گذشته سلامت جسمانی یا مشکلات روحی شما تا چه حدی فعالیت‌های معمول اجتماعی شمارا در رابطه با خانواده، دوستان، همسایگان با مردم مختل کرده بود؟ (یکی را مشخص نمائید)

1. اصلا 2.کمی 3. تا حدی 4. زیاد 5. خیلی زیاد

7- طی 4 هفته گذشته چقدر درد داشته‌اید؟ (یکی را مشخص نمائید)

1. اصلا 2. بسیارکم 3. کم 4. تا حدی 5. شدید 6. بسیار شدید

8- طی 4 هفته گذشته درد تا چه حد در کار معمولی و همیشگی شما اختلال ایجاد کرده بود ؟هم کار بیرون از منزل و هم کار منزل. (یکی را مشخص نمائید)

1. اصلا 2. کمی 3. تا حدی 4. زیاد. 5. خیلی زیاد

9- این پرسش‌ها مربوط به احساسات و وضعیت شما طی 4 هفته گذشته است. لطفا برای هر سوال نزدیکترین پاسخ به احساس خود را انتخاب کنید. (از هر ردیف یک عدد را مشخص نمائید)

چه مدتی طی 4 هفته گذشته:

	تمام اوقات	اغلب اوقات	خیلی وقت‌ها	بعضی وقت‌ها	به ندرت	هیچ وقت
الف- فردی سرحال و سرزنده بوده‌اید؟						
ب- فردی بسیار عصبی بوده‌اید؟						
ج- به حدی غمگین بوده‌اید که هیچ چیز شما را شاد نمی‌کند؟						
د- احساس آرامش و امنیت داشته‌اید؟						
ه- خود را پر از انرژی احساس می‌کرده‌اید؟						
و- خود را غمگین و افسرده احساس می‌کرده‌اید؟						
ز- احساس ضعف بیش از حد می‌کرده‌اید؟						
ح- فردی شاد بوده‌اید؟						

ط- احساس خستگی می‌کرده‌اید؟						

10- طی 4 هفته گذشته، وضعیت جسمانی یا مشکلات روحی چه مدتی فعالیت‌های اجتماعی شما را مختل کرده بود ؟ مثل دیدار دوستان، بستگان و غیره. (یکی را مشخص نمایید)

1. تمام اوقات 2. بیشتر اوقات 3 . بعضی اوقات 4. بندرت 5. هیچ وقت

11- هر کدام از عبارات زیر تا چه حدی در مورد شما درست یا نادرست است؟ (از هر ردیف یک عدد را مشخص نمایید)

	کاملا درست است	تا حدود زیادی درست است	نمی‌دانم	تا حدود زیادی نادرست است	کاملا نادرست است
الف- بنظر می‌رسد که من نسبت به دیگر افراد راحت‌تر مبتلا به بیماری می‌شوم.					
ب- سلامتی من مثل دیگر افرادی است که می‌شناسم.					
ج- انتظار دارم که وضع سلامتی‌ام بدتر شود.					
د- وضع سلامتی من عالی است.					

consent form

(Information for participants) form

After the researcher introduces him/herself;

- The aim of the research: **Determining the caregiver burden and quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences**

  - I; **Aisha Yakubu Idris** am the researcher and a student of higher education (master degree) in the department of medical surgical nursing, medical university of Tehran, Iran. Sincerely doctor (**Dr Golnar Ghane**) is my research supervisor.
- Dear participant: due to agreement to participate in this research, you will be interviewed for your current state and a scientific assessment of for this interview we will be in need of (20-30) mints of your time, and you will be interviewed only one time.
- Participant's rights: participants have the right to step back from participation at any time or any step of the research.
- If wanted, the participant can have the chance to see the whole results of this research, after it has been finished. Participants have the right to ask for clarification about any of the interview, if it wasn't already clear to them.
- Benefits and harms from participations:
- Participation in this research is for volunteer, participants will not be provided with any financial compensation for it, at the same time no payment will be received from the participations.
- Secrecy and confidentiality:
- In no way the participant's name will be asked for, nor any personal or specific question, that may annoy the participant or she doesn't like to answer it. We will make participants assure of the fact that their information will be kept safe, and apart from researcher, no other persons or parties will have access to them, and they won't be used for any purpose other than research.

  Feel free to share any opinions or suggestions with the researcher whenever and whenever you are, through the contacts below:

  Email: **aishayakubu338@gmail.com**

  Contact No.: 989056520466

(Informed consent) form

Research title: "**Assessing the caregiver burden and quality of life in people with hip fracture in selected hospitals of Tehran University of Medical Sciences 2024** "

Researcher's name: Aisha Yakubu Idris

Dear participant: we would first like to thank you for agreeing to participate in this research, wish you a good health.

Dear participant: after signing this form, you are ready to be interviewed on all the steps and the parts of this research.

You as a participant should have all your information true, that you are going to share with the researcher (note that the information will be used for research purposes solely)

This form proves that your participation is for volunteer, and you have the right to step back at any time from participation in the research.

Participant's signature:

Researcher's signature:

Date: / /

2. # Constent form in persian

فرم رضایت برای شرکت در طرح پژوهشی

عنوان طرح : Assessing the caregiver burden and quality of life in caregivers of people with hip fracture in selected hospitals of Tehran University of Medical Sciences 202

آقای / خانم

بدین وسیله از شما جهت شرکت در پژوهش فوق الذکر دعوت به عمل می آید. اطلاعات مربوط به این پژوهش در این برگه خدمتتان ارائه شده است و شما برای شرکت یا عدم شرکت در این پژوهش آزاد هستید

شما مجبور به تصمیم گیری فوری نیستید و برای تصمیم گیری در این باره می توانید سوالات خود را از تیم پژوهشی بپرسید و با هر فردی که مایل باشید مشورت نمایید. قبل از امضای این رضایت نامه مطمئن شوید که متوجه تمامی اطلاعات این فرم شده اید و به تمام سوالات شما پاسخ داده شده است.

1.من می دانم که اهداف این پژوهش عبارتند از:
تعیین فشار مراقبتی و کیفیت زندگی مراقبین بیماران با شکستگی هیپ است پروسه
بهبودی زمانبر منجر به فرسایش و افت کیفیت زندگی در مراقبین بیماران میشود و از آنجایی که یکی از وظایف پرستاران آموزش روند مراقبت های پس از بیمارستان به بیماران و مراقبین آنهاست لذا براسا نتایج این پژوهش می توان جهت کاهش فشار مراقبتی مراقبین و بهبود کیفیت زندگی آن ها برنامه ریزی کرد.

2.من می دانم شرکت من در این پژوهش کاملا داوطلبانه است و مجبور به شرکت در این پژوهش نیستم. به من اطمینان داده شد است که اگر حاضر به شرکت در این پژوهش نباشم، از مراقبت های معمول تشخیصی و درمانی محروم نخواهم شد و رابطه درمانی من با مرکز درمانی و پزشک معالج دچار اشکال نخواهد شد.

3.من می دانم که حتی پس از موافقت با شرکت در پژوهش می توانم هر وقت که بخواهم، پس از اطلاع به مجری، از پژوهش خارج شوم و خروج من از پژوهش باعث محرومیت از دریافت خدمات درمانی معمول برای من نخواهد شد.

4.نحوه ی همکاری اینجانب در این پژوهش به این صورت است:
همکاری من بدین صورت هست که پرسشنامه کیفیت زندگی و فشار مراقبتی را تکمیل میکنم و هیچ گونه تداخلی در درمان من نخواهد داشت.

5.منافع احتمالی شرکت اینجانب در این پژوهش به شرح زیر است:
از وضعیت کیفیت زندگی و فشار مراقبتی مطلع خواهم شد تا بتوانم بهتر مدیریت کنم

6.آسیب ها و عوارض احتمالی شرکت در این پژوهش به این شرح است:
هیچ گونه عارضه ای برای من نخواهد داشت.

7.در صورت عدم تمایل به شرکت در پژوهش خدمات معمول (درمانی، تشخیصی و ...) برای من ارائه خواهد شد که منافع و عوارض آن به این شرح است:
هیچ گونه عارضه ای برای من نخواهد داشت.

8.من می دانم که دست اندرکاران این پژوهش، کلیه اطلاعات مربوط به من را نزد خود به صورت محرمانه نگه داشته و فقط اجازه دارند نتایج کلی و گروهی این پژوهش را بدون ذکر نام و مشخصات اینجانب منتشر کنند.

9.می دانم که کمیته اخلاق در پژوهش با هدف نظارت بر رعایت حقوق اینجانب می تواند به اطلاعات من دسترسی داشته باشد

آدرس و شماره تلفن ثابت و همراه ایشان به شرح زیر به من ارائه شد.

10.من می دانم که هیچ یک از هزینه های انجام اقدامات پژوهشی به شرح ذیل بر عهده من نخواهد بود.
شرکت در این پژوهش هیچ هزینه ای برای من نخواهد داشت.

11.خانم / آقای به مشخصات ذیل جهت پاسخگویی به اینجانب معرفی شد و به من گفته شد تا هر وقت مشکلی یا سوالی در رابطه با شرکت در پژوهش مذکور پیش آمد با ایشان در میان بگذارم و راهنمایی بخواهم.
عایشا یاکوبا/ گلنار قانع

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12.من می دانم که اگر در حین و بعد از انجام پژوهش هر مشکلی اعم از جسمی و روحی به علت شرکت در این پژوهش برای من پیش آمد درمان عوارض آن و غرامت مربوطه بر عهده مجری خواهد بود.

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14.این فرم اطلاعات و رضایت آگاهانه در دو نسخه تهیه شده و پس از امضا یک نسخه در اختیار من و نسخه دیگر در اختیار مجری قرار خواهد گرفت.

تاریخ امضای شرکت کننده و

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3. Article

The Caregiver Burden and Quality of Life in Caregivers of Patients with Hip Fractures

Aisha Yakubu[1], Golnar Ghane*[2], Amir Hossein Dehghan[3]

Abstract

Background:
Caregivers of hip fracture patients often face a significant burden due to the demands of providing care to their loved ones. This burden can impact the quality of life of patients and caregivers. Therefore, this study will be done to identify caregiver burden and quality of life in people with hip fractures in selected hospitals of Tehran University of Medical Sciences.

Methods:
Cross-sectional data were collected from 150 adults referring to the Sina Hospital Orthopedic Surgery Research Center of XX in 2024. Caregivers of patients with Hip Fractures completed the demographic questionnaire, Short-form quality of life (SF-36) and the caregiver burden (CBI24) after obtaining written consent. Data were analyzed using SPSS software (V 16) using Descriptive and inferential statistics and Pearson correlation coefficient $p<0.05$.

Results:
There is an inverse correlation between the CBI_24 and the SF-36, which means that as the level of caregiver burden increases, the quality of life of the caregiver tends to decrease. This inverse relationship suggests that caregiver burden has a negative impact on various aspects of the caregiver's life, including physical health, emotional well-being, social functioning, and overall quality of life.

Conclusions:
The variability in scores highlights the heterogeneity of the caregiving experience and underscores the need for personalized support and interventions. Caregivers may require assistance in managing their time, coping with the developmental aspects of caregiving, and addressing physical and emotional health challenges to improve their overall quality of life. Additionally, the findings emphasize the importance of considering the caregiver's perspective when planning care for hip fracture patients, as the caregiver's well-being can impact the quality of care provided to the patient**.**

Keywords: Caregiver burden, Quality of Life, Patients, Hip Fractures

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Introduction:

Hip fracture is one of the most common orthopaedic injuries and a serious and complex condition reported as one of the top ten causes of morbidity, mortality, and increased healthcare costs in today's world (1, 2). It includes two types of fractures: intertrochanteric fracture and femoral neck fracture (3). Most studies have investigated the prevalence of acute and chronic complications after fracture surgeries, such as mortality, inability to walk, deep vein thrombosis, embolism, infection, secondary fracture, improper fusion, and deformity. Unfortunately, most of these patients did not return to functional levels before the fracture (4-7). The mortality rate in people with hip fractures is high (8, 9). In addition to long periods of hospitalization and heavy surgeries, they require periods of rehabilitation and long-term care to recover mobility (10, 11).

Studies have shown that despite medical advances, recovery after hip fractures has not significantly improved in the past 25 years (12, 13). Many patients who survive will lose the ability to live independently, and at least 50% of patients need help with normal daily activities, with about 25% of them transferred to long-term care (14). Therefore, one of the main problems is the low rate of patient return to daily activities (8). These patients encounter moving limitations, high risks of falls, muscle dysfunction, and disability for a long time (14-16).

Most of these patients face difficulties performing daily activities, loss of self-care ability, and independence, poor mental performance, decreased quality of life, delayed wound healing, high rates of postoperative complications, prolonged rehabilitation time, unmet care needs, cognitive impairment, and depression that limit their social activities, role-playing, and returning to their normal life (16-18, 10). Hip fracture is perceived as a catastrophic accident with long-term negative effects on the patient's lifestyles and quality of life as well as on their families, who often refer them to care centres (12, 19). In the long-term treatment process, personal strategies and family and community support play an important role (15, 20,21). Keeping patients in care centres significantly reduces their personal and social participation (22, 23). Therefore, the effects of contextual, personal, and cultural factors on patients' attitudes and their coping strategies are undeniable (19, 24).

In many cases, family members take on the role of caregivers, providing physical assistance, emotional support, and supervision during the recovery process (21,25). The responsibilities associated with caregiving for hip fracture patients can be both physically and emotionally demanding. Caregivers often face a multitude of challenges, including assisting with activities of daily living, managing medications, coordinating medical appointments, and coping with the psychological and emotional stressors that can arise from witnessing a loved one's pain and functional decline (15,21,26). These demands can lead to a phenomenon known as "caregiver burden," which encompasses feelings of stress, depression, anxiety, and a sense of being overwhelmed by the caregiving role (27).

Moreover, the impact of caregiving extends beyond the emotional and psychological well-being of caregivers; it also has significant implications for their quality of life (14,15). The term "quality of life" encompasses a broad range of factors, including physical health, mental well-being, social relationships, and overall life satisfaction. Caregivers of hip fracture patients may experience disruptions in their quality of life due to the time and energy devoted to caregiving tasks, which can lead to reduced personal well-being, compromised social lives,

and even physical health issues (27-29). Also, The quality of life of caregivers can be affected in various ways. They may experience increased stress, anxiety, and depression. The demands of caregiving can limit their social activities, work opportunities, and personal time, which can further impact their overall well-being (26,30).

Hip-fracture patients are among the most vulnerable of hospitalized patients. The associated caregiving rehabilitation task often falls to a member of the patient's family (28). Informal caregivers are an important resource for elderly patients suffering from hip fractures because they play a key role during their recovery (30). A mutual relationship seems to exist between the patient's psychological well-being and the caregiver's burden, so that improvements in the state of health of the one boost that of the other, and vice versa (23,26).

Caregivers of hip fracture patients often face a significant burden due to the demands of providing care to their loved ones (11,13). This burden can have an impact on the quality of life of patients and caregivers (13,31). Several studies have explored the relationships between caregiver burden and quality of life in this specific caregiving context (11). Furthermore, the Caregiver burden and the quality of life of caregivers play pivotal roles in the care and well-being of patients with hip fractures (14,16). However, so far, no study has been presented for caregivers of hip fracture patients in Iran. Therefore, this study will be done to identify caregiver burden and quality of life in people with hip fractures in selected hospitals of Tehran University of Medical Sciences.

Method:

Study design

The present study is a descriptive-analytical cross-sectional study; which was done from 2023 to 2024. The research environment includes orthopaedic departments and clinics of XX. The research population included all caregivers of hip fracture patients referred to these centres who met the inclusion criteria.

Sampling and participants

The sample was recruited through the implementation of Available sampling, specifically targeting patients. The G*power software was utilized to determine the minimum sample size. The criteria for determining sample size were alpha = 0.05, power = 0.80, and effect size of 0.25 with a 20% drop-out rate (n = 149).

sampling and inclusion and exclusion criteria

149 people from XX Orthopedic Surgery Research Center who met the criteria for entering the study were selected and entered the study by using the convenience sampling method.

Inclusion criteria involved individuals aged 18 and above with a recent hip fracture diagnosis. Exclusion criteria included patients with cognitive impairments and alcohol and drug addiction or communication barriers that may hinder accurate data collection.

Data collection

Data was collected through demographic information, quality of life (SF-36) and caregiver burden(CBI)

Measurements

Demographic Questionnaire: Demographic data including age, gender, marital status, education level, occupation, economic status/income, job, type of family relationship with the patient, duration of treatment, duration after hip fracture and Patient's ability to work was collected by a researcher-made questionnaire.

Quality of life (SF-36):

The quality of life (SF-36) questionnaire is a universal standard criterion. Its shortened form contains 36 items divided into 3 levels: 1) questions, 2) eight scales with any combination of 2 to 10 questions as physical health (10), bodily pain (2), general health (6), physical role functioning (4), vitality (3), emotional role functioning (3), social functioning (2), mental health (6), and 3) two summary scales forming physical health components (physical function, bodily pain, general health, physical role functioning) and mental health components (vitality, emotional role functioning, social functioning, mental health). Each domain of the questionnaire corresponds to questions that are measured by different options, including 2-choice (yes, no) and 6-choice (all the time, often, often, sometimes, sometimes, never) questions.). The average of the scale is calculated separately and the results of each scale vary from 0 to 100. To calculate the scores of the questionnaire, the total of each subscale is divided by 8. The obtained number is between 0-100. (31).

This scale was translated into Farsi by Montazeri et al. (2005) and content validity and internal consistency (0.70 to 0.85) were confirmed. Reliability is also with Cronbach's α in the range of 0.70 to 0.90 (32).

CBI Questionnaire

The CBI is composed of 24 items in five subscales, including time-dependence burden (items 1 to 5), developmental burden (items 6 to 10), physical burden (items 11 to 14), social burden (items 15 to 19), and emotional burden (items 20 to 24). All items are responded on a five-point Likert scale ranging from 1 (= never) to 5 (= nearly always). The total score is between 24 and 120; higher scores indicate more burden. Moreover, the scores between 24 and 39, 40 and 71, and 72 and 120 are categorized as low, moderate, or severe burdens, respectively (33). The validity and reliability of this scale were confirmed through content validity and internal consistency (Cronbach's alpha = 0.90) (18,30). Furthermore, in a preliminary study on the thirty caregivers of patients with hip fractures, the Cronbach α were calculated. However, the data from the preliminary study was not used in the final analysis.

Statistical analysis

All analyses were conducted using R version 4.4.0 (R Foundation for Statistical Computing, Vienna, Austria) (18). All continuous variables were checked for normality of distribution by the Kolmogorov–Smirnov test. Descriptive statistics, comprising frequency (percentage) and

mean (standard deviation (SD)) were employed to describe socio-demographic characteristics. Of note, for data with abnormal distribution, media (25th and 75th percentile) was utilized. The Pearson's linear correlation coefficient (r) and Spearman rank correlation

Table 1. Demographic characteristics of participants, (N = 149).

coefficient (ρ) were calculated to assess relationships among variables. Additionally, the independent samples T-test was used to compare means of continuous data and the Mann–Whitney U test was used for non-parametric data. For multiple comparisons, a one-way analysis of variance (ANOVA) was applied. In addition, if necessary, the Post Hoc test was run. On the other hand, the non-parametric Kruskal-Wallis test was used to compare the medians of continuous variables with skewed distributions across more than two groups. A nominal 2-sided probability value < 0.05 was considered to indicate statistical significance.

Ethical considerations

Ethical guidelines, ensuring the confidentiality of participants, voluntary participation and informed consent were followed in this study .Code of ethics (xx) for this study was obtained before commencing data collection, and steps were taken to safeguard participant privacy and data security throughout the study.

Results

Socio-demographic characteristics of the study sample

The study included 149 participants with a mean age of 41.32 years (SD = 11.82, range 17-84). The sample was 47.7% male and 52.3% female. Participants' relationships with the patient included 18.1% wives, 29.5% sons, 23.5% siblings, 16.1% parents, and 12.8% nurses. Marital status showed 26.8% single and 73.2% married. Educational level was 8.1% with literacy, 17.4% with sikl, 39.6% with the diploma, 25.5% with BSc and 9.4% with a postgraduate degree. Perceived ability was 2.0% "very much," 14.1% "much," 43.6% "a little" and 40.3% "very little" Mean hospital stay was 10.40 days (SD = 30.57, range 2-365) and the mean duration of fracture was 123.01 days (SD = 684.09, range 1-6208). Surgical history was reported by 46.3% of participants, while 53.7% had none (Table 1).

Variable		N (%)	Mean (SD)	Min. – Max.
Age (year)			41.32 (11.82)	17 - 84
Sex	Male	71 (47.7%)		
	Female	78 (52.3%)		
Relationship	Wife	27 (18.1%)		
	Son	35 (29.5%)		
	Sister/Brother	44 (23.5%)		
	Mom/Dad	24 (16.1%)		
	Nurse	19 (12.8%)		
Marital status	Single	40 (26.8%)		
	Married	109 (73.2%)		
Education level	Reading & Writing	12 (8.1%)		
	Sikl	26 (17.4%)		
	Diploma	59 (39.6%)		
	BSc.	38 (25.5%)		
	Postgraduate	14 (9.4%)		
Patient's ability	Very much	3 (2.0%)		
	Much	21 (14.1%)		
	A little	65 (43.6%)		
	Very little	60 (40.3%)		
Hospitalization (day)			10.40 (30.57)	2 - 365
Fracture duration (day)			123.01 (684.09)	1 - 6208
Surgical history	Yes	69 (46.3%)		
	No	80 (53.7%)		
SD: Standard deviation				

Table 2 shows the reliability, central tendency, and variability of various scales using a sample of participants. Each scale was evaluated based on the number of items, Cronbach's Alpha (α) as a measure of reliability, mean, standard deviation (SD), as well as the minimum (Min.) and maximum (Max.) values. The results indicate high reliability for most scales, as evidenced by Cronbach's Alpha values above 0.7, with CBI-24 exhibiting the highest reliability (α = 0.924) followed closely by SF-36 (α = 0.908) and SF.Physical.Functioning (α = 0.942), suggesting internal consistency among the items within each scale.

Table 2. Reliability, central tendency, and variability of scales in the study.

Factor	Items	Alpha	Mean	SD	Min.	Max.
CBI-24	24	0.924	66.15	17.14	28	112
CBI.Time	5	0.869	19.66	4.26	7	25
CBI.Evolutionary	5	0.883	14.95	5.75	5	25

CBI.Physical	4	0.792	11.47	4.01	4	20
CBI.Social	5	0.728	10.51	3.98	5	25
CBI.Emotional	5	0.810	9.57	4.09	5	24
SF-36	36	0.908	61.90	17.15	21.81	94.44
SF.Physical. functioning	10	0.942	74.17	29.58	0	100
SF.Role.functioning.physical	4	0.828	46.81	40.61	0	100
SF.Role.functioning.emotional	3	0.705	49.06	39.59	0	100
SF.Energy. fatigue	4	0.690	59.03	18.09	20	100
SF.Emotional.well_being	5	0.526	66.68	14.44	36	100
SF.Social. functioning	2	0.597	56.21	21.78	0	100
SF.Pain	2	0.793	65.87	27.33	0	100
SF.General.Health	5	0.611	56.95	18.80	15	90
SF.Health. change	1	-	53.69	25.40	0	100
Alpha: Cronbach's Alpha **SD:** Standard deviation						

The data provided in the table represent the central tendency and variability of scores for the Caregiver Burden Inventory-24 (CBI-24) and the Short Form 36 (SF-36) health survey, along with their respective subscales. These statistics give us insights into the average level of caregiver burden and quality of life, as well as the spread of these measures among the study participants.

Here's a breakdown of the key points from the table:

1. **CBI-24**: The mean score of 66.15 with a standard deviation (SD) of 17.14 indicates that there is a moderate level of caregiver burden in the sample, with a wide range of scores from a minimum of 28 to a maximum of 112. This suggests that the experience of caregiver burden varies significantly among caregivers.
2. **SF-36:** The mean score of 61.90 (SD = 17.15) suggests that the overall quality of life is moderate, with scores ranging from 21.81 to 94.44.

The findings from the Pearson correlation analysis(Table3) described suggest that there is a significant relationship between the overall Caregiver Burden Index (CBI_24) and its sub-areas, as well as an inverse relationship between the CBI_24 and the SF-36 total quality of life measure and its subdomains. Let's break down these findings in more detail:

Correlation within CBI_24 Sub-areas:

The overall CBI_24 score has strong positive correlations with its sub-areas, indicating that as the burden in one sub-area increases, the overall burden tends to increase as well.

The strongest correlation is with the Evolutionary sub-area ($r = .880$, $p < .01$), suggesting that changes over time in the caregiving situation have a profound impact on the overall caregiver burden.

The Physical sub-area also has a strong correlation ($r = .793$, $p < .01$), indicating that the physical demands of caregiving contribute significantly to the overall burden.

The Time (r = .703, p < .01), Social (r = .732, p < .01), and Emotional (r = .730, p < .01) sub-areas also show strong positive correlations, indicating that these aspects of caregiving are closely related to the overall caregiver burden.

Inverse Correlation with SF-36 Quality of Life Measure:

The CBI_24 has a moderate negative correlation with the SF-36 total quality of life measure (r = -.525, p < .01), indicating that as caregiver burden increases, the caregiver's quality of life tends to decrease.

This inverse relationship is also observed in the correlations between the CBI_24 and the SF-36 subdomains, such as Physical Functioning, Role Functioning (Physical and Emotional), Energy/Fatigue, Social Functioning, Pain, and General Health.

The strength of these negative correlations varies, with Physical Functioning (r = -.335, p < .01) and Role Functioning Physical (r = -.459, p < .01) showing moderate correlations, while others like Role Functioning Emotional (r = -.314, p < .01) and General Health (r = -.350, p < .01) show slightly weaker correlations.

Inter-correlation of CBI and SF-36 Subdomains:

The significant correlations between the CBI subdomains and the SF-36 subdomains highlight the multifaceted impact of caregiver burden on quality of life.

For example, higher scores on the CBI Physical sub-area are likely associated with lower scores on the SF-36 Physical Functioning subdomain, indicating that the physical demands of caregiving can impair the caregiver's physical health and functioning.

Similarly, higher scores on the CBI Emotional sub-area are likely associated with lower scores on the SF-36 Role Functioning Emotional subdomain, suggesting that emotional strain from caregiving can affect the caregiver's emotional well-being and ability to perform daily activities.

In summary, the Pearson correlation analysis reveals that caregiver burden, as measured by the CBI_24 and its sub-areas, is significantly and inversely related to the quality of life of caregivers, as measured by the SF-36 and its subdomains. This indicates that interventions aimed at reducing caregiver burden could potentially improve the quality of life for caregivers.

Table 3. Pearson correlations between factors(SF-36 and CBI-24).

Factors	CBI_24	CBI.Time	CBI.Evolutionary	CBI.Physical	CBI.Social	CBI.Emotional	SF_36	SF.Physical. functioning	SF.Role.functioning.physical	SF.Role.functioning.emotional	SF.Energy. fatigue	SF.Emotional.well_being	SF.Social. functioning	SF.Pain	SF.General.Health
CBI_24	1														
CBI.Time	.703**	1													
CBI.Evolutionary	.880**	.617**	1												

CBI.Physical	.793**	.432**	.629**	1											
CBI.Social	.732**	.281**	.533**	.529**	1										
CBI.Emotional	.730**	.338**	.503**	.490**	.532**	1									
SF_36	-.525**	-.451**	-.386**	-.447**	-.391**	-.367**	1								
SF.Physical. functioning	-.335**	-.315**	-.247**	-.263**	-.231**	-.243**	.795**	1							
SF.Role.functioning.physical	-.459**	-.443**	-.314**	-.436**	-.304**	-.296**	.794**	.497**	1						
SF.Role.functioning.emotional	-.314**	-.374**	-.235**	-.236**	-.139	-.229**	.671**	.378**	.681**	1					
SF.Energy. fatigue	-.347**	-.224**	-.287**	-.242**	-.353**	-.237**	.355**	.027	.152	.110	1				
SF.Emotional.well_being	-.084	-.024	-.021	.011	-.219**	-.094	.279**	.012	.034	-.013	.659**	1			
SF.Social. functioning	-.457**	-.317**	-.387**	-.397**	-.403**	-.257**	.566**	.284**	.424**	.386**	.158	.001	1		
SF.Pain	-.359**	-.190*	-.285**	-.332**	-.324**	-.265**	.645**	.490**	.413**	.324**	.058	.103	.570**	1	
SF.General.Health	-.350**	-.206*	-.246**	-.401**	-.245**	-.274**	.618**	.238**	.396**	.285**	.414**	.413**	.545**	.498**	1
****. Correlation is significant at the 0.01 level (2-tailed).** ***. Correlation is significant at the 0.05 level (2-tailed).**															

Discussion

The data suggest that caregivers of hip fracture patients experience a moderate level of burden, with time demands and developmental aspects of caregiving being particularly challenging. While caregivers generally report good physical functioning, they also experience limitations in their roles due to physical and emotional health issues. The moderate scores on various SF-36 subscales indicate that caregivers' quality of life is affected across multiple domains, including energy and fatigue, emotional well-being, social functioning, pain, and general health perceptions.

The variability in scores highlights the heterogeneity of the caregiving experience and underscores the need for personalized support and interventions. Caregivers may require assistance in managing their time, coping with the developmental aspects of caregiving, and addressing physical and emotional health challenges to improve their overall quality of life. Additionally, the findings emphasize the importance of considering the caregiver's

perspective when planning care for hip fracture patients, as the caregiver's well-being can impact the quality of care provided to the patient**.**

The finding that caregivers of patients with hip fractures experience a moderate level of burden is consistent with the literature on caregiver burden in the context of caregiving for individuals with physical disabilities or chronic health conditions. Several recent studies have explored the burden faced by caregivers of patients with orthopaedic conditions, including hip fractures, and have reported similar levels of burden.

For instance, a study by Longo et al. (2020) conducted a systematic review of family caregiver strain and challenges when caring for orthopaedic patients. The review included 28 studies and found that caregivers often struggled with the difficulties of care, with a strain improvement observed after behavioural interventions from healthcare team members. The study concluded that the role of the caregiver can lead to a deterioration of physical, cognitive, and mental conditions and that behavioural interventions can enhance quality of life and reduce strain, especially in the post-discharge period (17).

Another study by Ariza-Vega et al. (2021) focused on family caregivers' experiences with telerehabilitation for older adults with hip fractures. The study reported that family caregivers were satisfied with the program, found it manageable to use, and perceived benefits for older adults' functional recovery after hip fracture. However, they also suggested improvements to the program content, such as more variety in exercises and increased monitoring by health professionals. This suggests that while caregivers are willing to engage in supportive interventions, they also experience challenges that contribute to their burden (13).

Chiang MH et al. (2022) investigated prognostic factors for mortality, activity of daily living, and quality of life in Taiwanese older patients within one year following hip fracture surgery. The study found that ADL and QoL considerably decreased at 3 months following hip surgery. Old age, high Charlson Comorbidity Index, and American Society of Anesthesiologists grading were crucial predictors for mortality at the 1-year follow-up. The study also identified that the length of postoperative follow-up time, serum albumin level, patient cognitive status, and handgrip strength were considerably associated with QoL and ADL recovery prognosis in Taiwanese older adults following hip fracture. These factors imply several prognosis-predicting parameters that may assist clinicians in accounting for an individual's personalized risks to improve functional outcomes and reduce mortality (35).

In comparison with these studies, the current finding that caregivers experience a moderate level of burden aligns with the broader understanding that caregiving for individuals with hip fractures can be physically and emotionally demanding. The studies collectively highlight the need for comprehensive support systems, including behavioural interventions, telerehabilitation programs, and personalized risk assessments, to alleviate caregiver burden and improve patient outcomes.

It is important to note that while the level of burden may be moderate on average, there is significant variability in caregiver experiences. Some caregivers may face a high level of burden, which can have detrimental effects on their physical and mental health. Therefore, interventions should be tailored to the individual needs of caregivers and should be flexible enough to adapt to the changing demands of caregiving over time.

In conclusion, the moderate level of burden experienced by caregivers of hip fracture patients is a well-documented phenomenon in recent studies. Addressing this burden requires a multifaceted approach that includes supportive interventions, educational resources, and

personalized care plans to ensure that caregivers are equipped to manage the challenges of caregiving while maintaining their well-being.
The findings from the SF-36 health survey in the context of caregivers for hip fracture patients reveal a moderate overall quality of life, with considerable variability in scores indicating diverse experiences among caregivers. This is in line with recent studies that have explored the quality of life in caregivers of patients with similar conditions(15,16,19).

For example, a study by Vande et al. (2018) investigated the care-related quality of life of informal caregivers of the elderly after a hip fracture. The study used the CarerQoL-7D instrument and found that the average score was 83.7 (SD = 15.0) at one, three, and six months post-fracture, suggesting a relatively high level of caregiver quality of life. However, the study also noted that female caregivers reported a lower level of CarerQoL and were more likely to experience relational problems and physical health issues, which is consistent with the variability observed in the SF-36 scores (36).

The high mean score on the SF.Physical.The functioning subscale in the current study suggests that caregivers generally rate their physical functioning as good, which is an important aspect of their overall quality of life. This finding is supported by research that has shown that caregivers often prioritize the health and well-being of the care recipient over their own, sometimes at the expense of their physical health. The considerable variation in scores, however, indicates that there are caregivers who may be experiencing significant physical limitations (36,37).

The lower mean scores on the SF.Role.Functioning.Physical and SF.Role.Functioning.Emotional subscales suggest that role limitations due to physical and emotional health are more prevalent among caregivers. This is a common theme in caregiving literature, as the demands of caregiving can interfere with work, social activities, and other roles. A study by zare et al (2024) found that caregiver burden was associated with reduced participation in social activities and increased isolation, which may contribute to these role limitations(38).

The moderate scores on subscales such as SF.Energy.Fatigue, SF.Emotional.Well_Being, SF.Social.Functioning, SF.Pain, and SF.General.Health reflects the complex interplay of factors that contribute to caregiver quality of life. These findings are consistent with the literature that has documented the multifaceted nature of caregiver burden, including emotional distress, social isolation, and physical health challenges (36,37).

The SF.Health.The change subscale, with a mean score of 53.69, indicates that caregivers perceive their health as changing moderately over time. This perception of change may be influenced by the dynamic nature of caregiving, where the health of the care recipient can fluctuate, leading to varying levels of caregiver stress and health impacts (38).

In comparison with recent studies, the findings from the SF-36 survey in this study contribute to the understanding that caregivers of hip fracture patients experience a range of quality-of-life outcomes. While some aspects, such as physical functioning, may be relatively well-preserved, other areas like role functioning and emotional well-being can be significantly affected. These findings underscore the need for targeted interventions to support caregivers and improve their quality of life, which in turn can enhance the care they provide to patients.

The negative correlations between the CBI_24 and the SF-36 total score, as well as its subdomains (Physical Functioning, Role Functioning, Role Functioning Emotional, Energy Fatigue, Social Functioning, Pain, and General Health), suggest that as caregiver burden increases, the quality of life for caregivers tends to decrease. This inverse relationship is consistent with the broader literature on caregiver burden and quality of life.

Several studies have reported similar findings(15-17,29,36). For instance, a study found a significant negative correlation between caregiver burden and quality of life among caregivers of patients with dementia. Similarly, a study by Lee et al. (2024) reported a significant inverse relationship between caregiver burden and health-related quality of life in caregivers of stroke survivors. These studies, along with others, support the notion that caregiver burden can have a detrimental impact on various aspects of caregivers' quality of life(39).

The correlations between the CBI subdomains and the SF-36 subdomains provide further insights into the specific areas of quality of life that are most affected by caregiver burden. For example, the strong negative correlation between the CBI_24 and SF.Physical.Functioning suggests that caregiver burden may have a significant impact on caregivers' physical health and ability to perform daily activities. This finding is in line with research that has shown that caregiving can lead to physical health declines due to the demands and stress of caregiving (15-17).

The negative correlation between the CBI_24 and SF.Role.Functioning.Physical, as well as SF.Role.Functioning.Emotional, indicate that caregiver burden may also interfere with caregivers' ability to fulfil their roles in society, whether due to physical limitations or emotional strain. This is consistent with the literature that has documented the role strain experienced by caregivers, which can lead to difficulties in maintaining employment, social relationships, and other responsibilities (37,38).

The correlation between the CBI_24 and SF.Energy.Fatigue suggests that caregiver burden may contribute to feelings of fatigue and reduced energy levels among caregivers, which is a common finding in caregiving research (17,40.41).

The negative correlations between the CBI_24 and SF.Social.Functioning, SF.Pain, and SF.General.Health further highlights the multifaceted impact of caregiver burden on quality of life, affecting social interactions, pain management, and overall health perceptions.

In summary, the findings from the Pearson correlation analysis are consistent with previous studies that have explored the relationship between caregiver burden and quality of life. The inverse correlations between the CBI_24 and the SF-36 total score and its subdomains underscore the significant impact of caregiver burden on various aspects of caregivers' quality of life. These findings emphasize the need for interventions and support systems to help alleviate caregiver burden and improve the quality of life for caregivers of hip fracture patients and other caregiving populations.

Conclusion:

The findings from this study reveal that caregivers of hip fracture patients bear a moderate level of burden, with significant challenges related to time management and the developmental aspects of caregiving. Despite reporting relatively good physical health, caregivers experience limitations in their roles due to physical and emotional health issues.

The impact on caregivers' quality of life is evident across multiple domains, including energy and fatigue, emotional well-being, social functioning, pain, and general health perceptions. The heterogeneity in caregiving experiences underscores the necessity for personalized support and interventions to address the diverse needs of caregivers. These results highlight the critical importance of considering the caregiver's perspective in the care of hip fracture patients, as caregiver well-being is intrinsically linked to the quality of care provided to the patients.

An inverse relationship was observed between caregiver burden and quality of life, indicating that as caregiver burden increases, the quality of life for caregivers tends to decrease. These findings highlight the significant impact of caregiving responsibilities on the well-being of caregivers and underscore the need for supportive interventions to alleviate caregiver burden and enhance the quality of life for this population.

Application for Clinical Research and Teaching:

The insights gained from this study can be applied to clinical research by informing the development of interventions aimed at reducing caregiver burden and improving caregiver quality of life. These interventions could include psychoeducational programs, respite care services, and caregiver support groups. In teaching, these findings can be integrated into healthcare professional education to sensitize future practitioners to the challenges faced by caregivers and to emphasize the importance of a holistic approach that includes caregiver needs in patient care plans.

Suggestions for Future Research:

Future research should focus on identifying specific interventions that are most effective in reducing caregiver burden and improving the quality of life for caregivers of hip fracture patients. Longitudinal studies could provide a better understanding of how caregiver burden and quality of life evolve over time and in response to different interventions. Additionally, research could explore the effectiveness of tailored support programs that address the unique needs of caregivers based on their scores on measures like the SF-36. Furthermore, investigating the relationship between caregiver well-being and patient outcomes could provide additional evidence for the importance of including caregiver support in comprehensive care plans for hip fracture patients.

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چکیده

عنوان:

بررسی فشار مراقبتی و کیفیت زندگی مراقبین افراد مبتلا به شکستگی لگن در بیمارستان های منتخب دانشگاه علوم پزشکی تهران **1403**

زمینه:

با توجه به سیر طولانی درمان شکستگی هیپ ، ناتوانی شدید و وابستگی بیماران در انجام فعالیت های روزمره، تجربه عوارض متعدد بعد شکستگی و بی حرکتی ناشی از آن و به دنبال آن نیاز های مراقبتی جدید و تغییرات اساسی در سبک زندگی بیماران با شکستگی هیپ، مراقبین تنش‌های زیادی را تجربه می‌کنند و با چالش‌های فیزیکی و روانی مواجه می شوند. بنابراین مراقبین بیماران شکستگی لگن به دلیل نیاز مراقبتی بالا این بیماران، اغلب با فشار مراقبتی قابل توجهی روبرو هستند. این فشار مراقبتی می تواند کیفیت زندگی مراقبین و حتی بیمارانشان را تحت تاثیر قرار دهد. لذا این مطالعه به منظور شناسایی فشار مراقبین و کیفیت زندگی در مراقبین افراد مبتلا به شکستگی لگن در بیمارستان های منتخب دانشگاه علوم پزشکی تهران انجام شد.

مواد و روش:

مطالعه حاضر، پژوهش یک مطالعه مقطعی از نوع توصیفی تحلیلی است که به بررسی فشار مراقبتی و کیفیت زندگی و ارتباط بین آن ها در مراقبین افراد با شکستگی لگن در بیمارستان های منتخب دانشگاه علوم پزشکی تهران در سال 1403 پرداخته است. جامعه پژوهش شامل کلیه مراقبین بیماران با شکستگی لگن بودند.149 نفر از مراقبین واجد شرایط با روش در دسترس از میان جامعه پژوهش انتخاب شدند. پرسش‌نامه‌های مشخصات دموگرافیک، فشار مراقبتی (CBI24) و کیفیت زندگی(SF-36) توسط مراقبین تکمیل گردید. سپس داده‌ها از طریق آمار توصیفی و استنباطی و ضریب همبستگی پیرسون با استفاده از نرم‌افزار Spss ورژن 16 مورد تجزیه‌وتحلیل قرار گرفت($p<0/05$).

نتایج:

میانگین نمره فشار مراقبتی 17/14±66/15 بوده است که بیانگر فشار مراقبتی متوسط بین مراقبین با دامنه (112-28) است. این دامنه بیانگر تجربه فشارمراقبتی متفاوت بین مراقبین است. ابعاد، فشار مراقبتی مرتبط با زمان با میانگین 19/66 و انحراف معیار 4/26 بیشترین میانگین و فشار مراقبتی عاطفی با میانگین 9/57وانحراف معیار 4/09 کمترین میانگین را به خود اختصاص داد. همچنین میانگین کیفیت زندگی مراقبین 17/15 ± 61/90 بود. که بیانگر کیفیت زندگی متوسط با دامنه (94/44-21/18) است. بین متغیرهای فشار مراقبتی و کیفیت زندگی، رابطه منفی و معنی‌داری وجود داشت($r = - ۰/۵۲۵ , P <۰/۰۰۱$). به این معنی که با افزایش فشار مراقبتی، کیفیت زندگی مراقبین کاهش یافته است. این رابطه معکوس نشان می‌دهد که فشار مراقبتی بر جنبه‌های مختلف زندگی مراقب، از جمله سلامت جسمانی، رفاه عاطفی، عملکرد اجتماعی و کیفیت کلی زندگی تأثیر منفی دارد.

نتیجه گیری و پیشنهادات:

رابطه معکوس بین فشار مراقبتی مراقبین و کیفیت زندگی نشان می دهد که با افزایش بار مراقبین، کیفیت زندگی مراقبین کاهش می یابد. این یافته ها تأثیر قابل توجه مسئولیت های مراقبتی را بر رفاه مراقبین برجسته می کند و بر نیاز به مداخلات آموزشی حمایتی برای

کاهش فشارمراقبین و افزایش کیفیت زندگی برای این جمعیت تأکید می کند. همچنین تنوع در نمرات، ناهمگونی تجربه مراقبت را برجسته می کند و بر نیاز به حمایت و مداخلات شخصی تاکید می کند. مراقبین ممکن است برای مدیریت زمان خود، مقابله با جنبه های رشدی مراقبت و رسیدگی به چالش های سلامت جسمی و عاطفی برای بهبود کیفیت کلی زندگی خود به نیاز به کمک داشته باشند. علاوه بر این، یافته‌ها بر اهمیت در نظر گرفتن دیدگاه مراقبان هنگام برنامه‌ریزی مراقبت از بیماران شکستگی لگن تأکید می‌کنند، زیرا رفاه مراقب می‌تواند بر کیفیت مراقبت ارائه شده به بیمار تأثیر بگذارد.

کلید واژه ها : فشار مراقبتی، کیفیت زندگی، بیماران شکستگی لگن، مراقبین

دانشگاه علوم پزشکی تهران

پردیس بین الملل

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پرستاری داخلی جراحی

عنوان:

بررسی فشارمراقبتی و کیفیت زندگی در مراقبین افراد با شکستگی لگن دربیمارستان های منتخب علوم پزشکی تهران1403

نگارنده:

عایشا یاکوبا ادریس

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دکتر گلنار قانع

سال1403

شماره پایان نامه: