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Quality of Life in Informal Caregivers of Femoral Neck Fracture Patients: A scoping review

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Abstract
This scoping review explores the quality of life and burden experienced by informal caregivers of patients with femoral neck fractures. Analyzing eight studies from 2015–2025, it finds caregivers face considerable psychological, physical, and social stress, especially early in recovery, leading to reduced well-being and increased frailty. Tools like SF-36 and CarerQoL-7D effectively assess these burdens. Protective factors such as social support and self-efficacy mitigate stress, while counseling interventions enhance emotional resilience and coping. The findings underscore the need for healthcare systems to include caregiver assessments and support measures in recovery plans to improve outcomes for both caregivers and patients.

Keywords: quality of life, informal caregiver, femoral neck fracture, patient

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1.0 Introduction

Femoral neck fracture (FNF) is one of the most severe types of hip fracture, commonly affecting older adults due to osteoporosis and age-related bone fragility (Gao et al., 2024; Yang, 2023). This injury is associated with high morbidity and mortality, with an estimated 13.5% of patients dying within six months of fracture and only about half beginning rehabilitation following diagnosis (Sukchokpanich et al., 2023). Beyond the clinical consequences, FNFs create long-lasting challenges for both patients and their families. Recovery often requires extended care across hospital, rehabilitation, and community settings, which places a significant burden on informal caregivers. These caregivers, often spouses or adult children, assume responsibilities for daily care activities such as assisting with mobility, personal hygiene, medication management, and rehabilitation exercises. Unlike healthcare professionals, informal caregivers typically lack training and institutional support, yet their role is crucial in shaping patient recovery outcomes (Jeffs et al., 2013, as cited in Gao et al., 2024; van de Ree et al., 2018).

Evidence suggests that caregiving for FNF patients is associated with multiple burdens that affect quality of life. Psychologically, caregivers frequently experience stress, anxiety, depression, and feelings of helplessness, particularly during the first three months after discharge when care demands are most intense (Von Kaeppler et al., 2021; Sukchokpanich et al., 2023). Physically, the daily strain of lifting, transferring, and assisting patients often leads to fatigue, musculoskeletal pain, and sleep disruption (Gao et al., 2024).

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Financial pressures add another dimension, as many caregivers reduce working hours or resign from employment to provide care, while also managing increased expenses for treatment, equipment, and transportation (Xiao & Zhou, 2020). These burdens do not exist in isolation but interact to produce complex and enduring impacts on caregiver well-being.

Although these challenges are well-documented, much of the current literature is fragmented and descriptive. Many studies report caregiver experiences but do not integrate findings within a broader conceptual framework. As a result, the processes through which caregiving stress develops, and the mechanisms that may mitigate its effects, remain underexplored (Ariza-Vega et al., 2021; Celik & Bilik, 2024). In order to strengthen the synthesis of evidence, this review employs the Stress Process Model (SPM) and the World Health Organization Quality of Life (WHOQOL) framework. The SPM conceptualizes caregiving as a dynamic trajectory involving primary stressors such as patient dependency and medical tasks, secondary strains such as financial burden or role conflict, mediators including coping strategies and social support, and outcomes such as caregiver burden, depression, and reduced quality of life (Pearlin et al., 1990, as cited in Xiao & Zhou, 2020). Complementing this, the WHOQOL framework emphasizes the multidimensional nature of well-being, encompassing physical, psychological, social, and environmental domains (WHO, 1998, as cited in Gao et al., 2024). Together, these frameworks allow for a systematic and critical examination of caregiving research.

When applied to existing studies, several gaps become apparent. Psychological distress is widely reported, but little attention is given to positive outcomes such as resilience or caregiving mastery (Patrocinio et al., 2020). Physical and financial strains are acknowledged but often underexplored, particularly in low-resource settings (Xiao & Zhou, 2020). Mediators such as coping strategies and social support are mentioned but rarely tested in depth, leaving unanswered questions about why some caregivers adapt more successfully than others (Fernández-González et al., 2023). Gender differences and cultural contexts are also insufficiently addressed, despite evidence that female caregivers and those in collectivist societies may experience caregiving differently (van de Ree et al., 2018; Yang, 2023). Furthermore, most studies rely on cross-sectional designs and inconsistent outcome measures, limiting comparability and obscuring long-term caregiving trajectories (Von Kaeppler et al., 2021; Gao et al., 2024).

In light of these limitations, this scoping review aims to map and critically synthesize the evidence on the quality of life of informal caregivers of femoral neck fracture patients. By applying the Stress Process Model and WHOQOL framework, the review seeks to identify the psychological, physical, social, and financial burdens faced by caregivers, examine mediators that influence outcomes, and highlight systematic research gaps. Ultimately, this approach provides a conceptual foundation for future research and policy to design targeted interventions that improve caregiver well-being and, consequently, patient recovery outcomes.

2. Methodology

This scoping review was conducted to identify existing literature on the quality of life and caregiving experiences of informal caregivers of patients with femoral neck fractures, following the five-stage framework by Arksey and O'Malley (2005): (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data, and (5) collating, summarizing, and reporting the results. The review was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines (Tricco et al., 2018), as shown in figure 1.

2.1 Identifying the Research Questions

The research question guiding this scoping review was "What is known about the quality of life and caregiving experiences of informal caregivers of patients with femoral neck fractures?".

2.2 Identifying Relevant Studies

An exhaustive search strategy was developed across four electronic databases, covering literature published from 2015 to 2025, including Science Direct, Scispace, PubMed, and Semantic Scholar. This timeframe is significant due to the advancements in healthcare, evolving caregiving practices, and shifts in healthcare policies worldwide. Search terms included combinations of keywords and Boolean operators such as "informal caregiver," "quality of life," and "femoral neck fracture" to find relevant information. Reference lists of included articles were also manually reviewed to identify additional studies for inclusion. If the source did not mention FNF by name, it had to refer to diagnoses associated with FNF (hip fracture and neck of femur fracture). Sources that focused only on the quality of life of patients with FNF or children were excluded. The search strategy considered the specific command functions, search fields, and vocabulary of each database used and was limited to publications in English. Four reviewers independently reviewed 118 titles and abstracts, and the process is detailed in Figure 1.

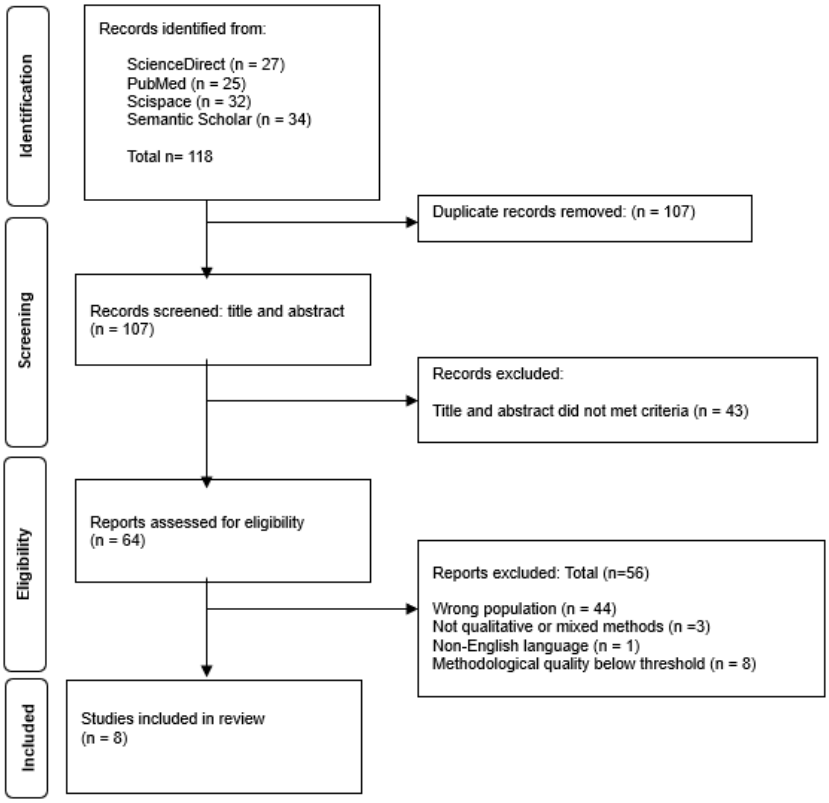

Figure 1: PRISMA flow diagram for the scoping

2.3 Study Selection

All records were included when available in English or translated into English and imported into EndNote 21 for deduplication, followed by manual screening using Microsoft Excel by two independent researchers. Studies were incorporated into the scoping review if they satisfied the following criteria: (1) involving informal caregivers of adult patients with femoral neck fractures; (2) focusing on outcomes related to quality of life, coping strategies, or psychological well-being; and (3) published in English and peer reviewed. Articles that did not fulfill the inclusion criteria were excluded. The exclusion criteria encompassed studies solely concentrating on patient outcomes, editorials, review articles, and non-human studies. The selected studies employed various designs, including cross-sectional, longitudinal, qualitative, and interventional methodologies. Following a comprehensive review of full-text articles, a total of eight articles were included for data extraction in the final analysis.

2.4 Charting the Data

Data from the included studies was extracted and organized using a structured Microsoft Excel spreadsheet. All captured information related to authorship, year of publication, country, study design, study population, methodology, measurement tools, and key findings concerning caregiver quality of life.

2.5 Collating, Summarizing, and Reporting the Results

The charted data addressing the aims of this scoping review were discussed with the research team during weekly meetings. Quantitative findings were summarized descriptively, while qualitative data were analyzed thematically. Four reviewers independently conducted the data extraction to ensure accuracy and consistency, which are essential to the scoping review charting process. These findings were systematically organized and reported to provide an overview of the current evidence landscape and to identify areas requiring further research.A femoral neck fracture (FNF) is a type of hip fracture that occurs in the proximal part of the femur, often in elderly individuals due to degenerative bone conditions such as osteoporosis (Gao et al., 2024; Yang, 2023), which can significantly impact a patient's mobility.

3.0 Results

The scoping review findings are based on eight studies published from 2018 to 2024. The initial search yielded 118 unique articles (see Figure 1). After screening titles and abstracts, full-text assessments narrowed the pool to 64 articles, with eight meeting all inclusion criteria. These studies involved a total of 1,029 caregivers, primarily middle-aged to older females, including spouses and adult children. the quality of life for informal caregivers of femoral neck fracture patients is significantly impacted, especially in the early stages of the patient's recovery. Caregivers experience significant psychological, physical, and social stress, often resulting in decreased well-being and heightened frailty. A summary of the selected articles is provided in Table I.

Table 1: Summary of the articles

Author and Year	Population	Study Design	Instruments	Summary of Findings
van de Ree, et al. (2018). CarerQoL and Health-related Quality of Life of Informal Caregivers	Informal caregivers of the elderly post-hip fracture n=123	Longitudinal Observational Study	SF-36, EQ-5D-5L, others	Caregiver burden decreases over the first year; depression symptoms are common initially but tend to improve.
Ariza-Vega, P. et al. (2020). The Journey of Recovery: Caregivers' Perspectives from a Hip Fracture Telerehabilitation Clinical Trial	Caregivers of patients with various conditions, during tele-rehabn=44	Exploratory Secondary Study	No specific tools listed for caregiver QoL measurement	Three categories related to recovery practices and experiences; highlights the need for caregiver inclusion
Peifen (2020). Factors Associated with the Burden of Family Caregivers of Elderly Patients with Femoral Neck Fracture	Elderly with femoral neck fracture and their caregivers n=183	Cross-sectional	Social Support Rating Scale (SSRS), General Self-Efficacy Scale (GSE), Zarit Burden Interview (ZBI)	Cognitive impairment in patients influences caregiver burden; QoL of caregivers is affected.
Ericka P. von Kaeppler (2021). Family Caregivers' Mental Health and Recovery of Elderly Patients with Hip Fracture	Caregivers of hip fracture patients n=120	Prospective Cohort Study	EQ-5D, WHO-5 Wellbeing Index	Caregivers' QoL declined within 3 months; over half experienced mild depression.
Jie Yang (2023). Effects of Total Hip Replacement and Femoral Head Replacement in the Treatment of Femoral Neck Fractures in Elderly Patients	Caregivers of elderly patients with femoral neck fractures n=30	Randomized Controlled Trial	SF-36, EQ-5D-5L, HRSD	Caregiver QoL declined particularly in the first 3 months; caregiver burden linked to the patient recovery process.
Sukchokpanich, P., et al. (2023). Quality of Life and Depression Status of Caregivers of Patients with Femoral Neck or Intertrochanteric Femoral Fractures	Caregivers of hip fracture patients n=50	Prospective Cohort Study	SF-36, EQ-5D-5L, EQ-VAS, Hamilton Rating Scale for Depression (HRSD)	Identified themes related to caregiving burden, psychological distress, and support needs
Buket Çelik, et al. (2024). The Effect of Consultancy for Family Caregivers with Hip Fractures on Caregiver Burden, Stress, and Quality of Life	Family caregivers of patients with femoral fractures n=100	Quasi-experimental Study	Zarit Burden Interview, Caregiver Strain Index, Quality of Life Scale	Highlights the importance of ethical considerations and the role of consultancy/support in caregiver well-being
Gao et al. (2024). Postoperative rehabilitation exercise experiences of geriatric patients with femoral neck fractures based on the perspective of medical staff: a qualitative study	21 medical staff (orthopedists, nurses, rehabilitation therapists) from a tertiary hospital in Zhejiang, China	Qualitative, descriptive phenomenological	Semi-structured interviews; qualitative data analysis with NVivo	Identified obstacles in rehabilitation implementation, incomplete integration of theory, and the need for multidisciplinary support. Highlighted the importance of health education and technological support in optimizing rehab outcomes.

3.1 Overview of the studies

a. Study Design

A variety of research designs were employed in the selected studies, including two experimental studies, six cross-sectional studies, one longitudinal study, and one prospective observational study. A comprehensive understanding of the quality of life among informal caregivers of patients with femoral neck fractures was obtained through these investigations.

b. Population and Sample Size

A variety of sample sizes were identified across the studies, with the largest population comprising 183 caregivers in the study conducted by Xiao and Zhou (2020), followed by 176 caregivers in the study by Sukchokpanich et al. (2023). Smaller sample sizes were also documented in other research, with populations ranging from 50 to 123 caregivers. The diversity in sample sizes facilitated a range of insights into caregiver burden, quality of life, and depression status across different regions and patient demographics.

c. Location and Setting

The studies were predominantly conducted across multiple countries, with the Netherlands and China contributing the highest number of studies (n = 2 each). Other countries included in the research were Spain (n = 1), Tanzania (n = 1), and Thailand (n = 2). The research spanned from 2000 to 2023, with the majority of investigations conducted within hospital settings and community-based environments.

d. Quality of Life of Caregivers

Several standardized instruments were employed to assess the quality of life among informal caregivers. The CarerQoL-7D was the most frequently utilized tool, with six studies adopting it to evaluate caregivers' relational, emotional, and physical well-being. Other instruments included the Zarit Burden Interview and the Hamilton Rating Scale for Depression, each used in four studies to assess

caregiver burden and depression symptoms, respectively. Additionally, the SF-36 health survey was implemented in three studies to examine overall mental and physical health status.

e. Main Findings

From the final eight selected articles, the findings were synthesized into four interrelated themes: (1) physical and financial strain; (2) psychological and emotional burden; (3) support and coping mechanisms; and (4) outcomes on the informal caregiver's well-being.

Psychological and emotional burden

Caregivers frequently reported stress, anxiety, and depressive symptoms, particularly in the first three months following hospital discharge. Sukchokpanich et al. (2023) found that nearly half of caregivers experienced mild-to-moderate depression, while Von Kaeppler et al. (2021) reported insomnia and emotional exhaustion linked to feelings of inadequacy. Several studies highlighted that inadequate hospital discharge education and poor communication increased caregivers' psychological distress (Yang, 2023; Çelik & Bilik, 2024).

Physical and Financial Strain

The physical demands of caregiving were substantial. Gao et al. (2024) reported that over 60% of caregivers experienced fatigue and musculoskeletal pain from assisting with transfers, bathing, and mobility tasks. These physical demands often coexisted with financial challenges, including reduced employment hours, job resignation, and increased household expenses for medical devices and transportation (Peifen, 2020; Xiao & Zhou, 2020). Caregivers with lower income reported significantly higher burden scores, reflecting the intersection between economic vulnerability and emotional strain.

Support and coping mechanisms

Several studies identified the role of support systems and coping resources in shaping caregiver experiences. Structured interventions such as counseling, telerehabilitation, and caregiver education reduced emotional burden and improved coping capacity (Ariza-Vega et al., 2021; Fernández-González et al., 2023; Çelik & Bilik, 2024). Caregivers with higher resilience and self-efficacy reported lower stress levels, even when caring for patients with severe disability (Patrocinio et al., 2020).

Outcomes on the informal caregiver's well-being.

Caregivers consistently reported reduced quality of life compared to population norms, with particularly low scores in physical health, vitality, and emotional well-being domains (van de Ree et al., 2018). Although some recovery in well-being was observed over time, caregivers often continued to experience poorer health and social participation than non-caregiving peers (Sukchokpanich et al., 2023). Female caregivers reported greater psychological and physical burden than males, suggesting gender as an important but underexplored determinant of caregiver outcomes.

4.0 Discussion

This scoping review demonstrates that caregiving for patients with femoral neck fractures is a multifaceted experience that places significant demands on informal caregivers. By situating the findings within the Stress Process Model (SPM) (Pearlin, Mullan, Semple, & Skaff, 1990) and the WHOQOL framework (World Health Organization [WHO], 1998), the synthesis highlights how stressors, mediating factors, and contextual influences interact to shape caregiver well-being. This theoretical lens not only clarifies the complexity of caregiving but also exposes gaps in current evidence that limit the development of effective interventions.

One of the most consistent findings was the psychological distress experienced by caregivers, particularly in the early months of caregiving. Symptoms of depression, anxiety, and feelings of inadequacy were widespread (Sukchokpanich et al., 2023; Von Kaeppler et al., 2021). According to the SPM, these outcomes arise from primary stressors such as high levels of patient dependency, which intensify emotional demands, and from secondary strains such as role overload and loss of personal freedom. However, studies rarely explored positive dimensions of caregiving such as resilience, mastery, or emotional growth, despite evidence from other caregiving populations that these protective factors can mitigate burden (Patrocinio, Pereira, Almeida, & Ribeiro, 2020). This imbalance results in a one-dimensional picture of caregiving, reinforcing a deficit perspective rather than recognizing its potential for personal adaptation.

Physical and financial challenges, though less frequently examined, are critical components of caregiver burden. The daily physical work of transferring patients, managing mobility aids, and assisting with activities of daily living often leads to musculoskeletal discomfort, fatigue, and disrupted sleep (Gao, Zhong, Zhan, Bao, & Zhu, 2024). At the same time, caregivers encounter economic strain when they reduce working hours, leave employment, or take on additional expenses for treatment and rehabilitation (Xiao & Zhou, 2020). These findings suggest that physical and financial stressors are deeply interlinked with psychological outcomes, amplifying distress when resources are limited. Yet, these aspects remain underrepresented in research, pointing to a need for more comprehensive approaches that account for the full range of caregiving demands.

Mediating mechanisms such as social support, self-efficacy, and coping strategies were mentioned but infrequently tested. Interventions like caregiver education, telerehabilitation, and counseling showed some promise in reducing stress and improving coping capacity (Ariza-Vega et al., 2021; Fernández-González et al., 2023; Çelik & Bilik, 2024).

However, the absence of systematic evaluation means that the pathways through which these mediators influence outcomes remain poorly understood. The SPM underscores the importance of these mechanisms, suggesting that variability in caregiver well-

being cannot be explained by stressors alone. Future studies should move beyond acknowledging mediators to explicitly examining how they moderate or mediate the relationship between stress and caregiver outcomes.

Gender and culture also emerged as significant, though insufficiently explored, influences on caregiving. Female caregivers consistently reported worse physical and psychological outcomes than men (van de Ree et al., 2018). These findings align with gendered expectations in most societies, where women disproportionately shoulder unpaid caregiving responsibilities, often with fewer social and financial resources. Culturally, caregiving norms differ widely. In Asian societies, caregiving is strongly shaped by filial piety, which places moral responsibility on children to care for aging parents (Yang, 2023). In collectivist cultures, caregiving is sometimes supported by extended families, yet the burden still tends to fall heavily on women. In contrast, in individualistic societies, greater reliance on formal services may reduce direct burden but alter expectations of family involvement (Gao et al., 2024). Despite these observations, few studies analyzed gender and cultural influences in depth, and none employed intersectional approaches to examine how these factors interact with socioeconomic conditions. This omission reduces the applicability of findings across diverse contexts and populations.

From a methodological perspective, the included studies revealed several weaknesses that limit the strength of evidence. Many were cross-sectional, capturing only a single point in time and offering little insight into how caregiver burden changes across the recovery trajectory. Longitudinal studies, such as van de Ree et al. (2018), were rare but provided more nuanced accounts of evolving burden. Measurement inconsistency was also problematic, with some studies using validated instruments like the Zarit Burden Interview or SF-36, while others relied on non-standardized tools. Furthermore, interventional studies were limited in number and scope, with few testings structured or culturally tailored caregiver support programs. This lack of methodological rigor hampers comparability, generalizability, and the development of evidence-based policies.

Despite these gaps, the findings underscore important implications for healthcare systems and policy. Routine caregiver assessments could help identify individuals at risk of high burden and connect them with appropriate services. Structured caregiver education programs should be embedded in discharge planning to prepare caregivers for rehabilitation tasks, safe transfer techniques, and medication management. Psychosocial support, including peer support groups and digital health interventions, should be prioritized to strengthen coping and reduce isolation. Additionally, policies addressing financial strain—such as subsidies, tax relief, or flexible employment schemes—would help mitigate economic vulnerability. Importantly, interventions must be adapted to local cultural contexts and address gender inequities to ensure equitable support for all caregivers.

By framing the findings within theoretical models, this review contributes more than a descriptive account of caregiver burden. It demonstrates that caregiving outcomes are shaped by dynamic interactions between stressors, mediators, and context, and that gaps in the evidence limit the ability to design targeted, effective interventions. Addressing these gaps requires theory-driven, methodologically robust, and culturally sensitive research that captures the full complexity of caregiving.

5.0 Conclusion & Recommendation

This scoping review synthesized evidence on the quality of life of informal caregivers of patients with femoral neck fractures, revealing caregiving as a multidimensional challenge shaped by psychological, physical, financial, and social demands, as well as gender and cultural contexts. Psychological distress was the most consistently reported outcome, while physical strain and economic hardship were also significant yet underexplored. Protective factors such as coping, resilience, and social support were mentioned but seldom studied systematically, limiting understanding of variability in caregiver outcomes.

The review has limitations, including reliance on English-language databases, exclusion of regional and grey literature, and the small number of studies with heterogeneous designs, many of which were cross-sectional. These factors reduce generalizability and highlight the need for more rigorous research.

Actionable strategies include embedding structured caregiver training into discharge planning, implementing routine caregiver assessments, and providing integrated follow-up programs, including digital supports such as telerehabilitation. Policymakers should also address financial strain through caregiver allowances, flexible work arrangements, and culturally adapted, gender-sensitive interventions. Future research should prioritize longitudinal and interventional studies, incorporate mediators into design, and conduct cross-cultural comparisons. By applying the Stress Process Model and WHOQOL framework, this review offers a structured foundation for advancing caregiver support in practice and policy.

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Paper Contribution to Related Field of Study

This scoping review contributes by mapping existing evidence on the quality of life and caregiving experiences of informal caregivers of patients with femoral neck fractures, highlighting inconsistencies and research gaps, and recommending more standardised, multidimensional future studies.

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