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Quality of Life and Burden in Informal Caregivers of Femoral Neck Fracture Patients

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Abstract

Femoral neck fractures in older adults often require extensive recovery, making family caregivers essential in providing daily assistance and emotional support. This study examined the quality of life and burden among 176 informal caregivers in Malaysian public hospitals using the SF-36 and Caregiver Burden Inventory. Findings showed moderate physical (PCS = 48.84) and mental (MCS = 51.81) quality of life, alongside moderate caregiver burden (CBI = 46.39). Caregivers nonetheless reported notable strain across multiple domains. These results highlight the need for improved support systems, including psychosocial resources, respite care, and stronger rehabilitation services to enhance caregiver well-being and patient recovery.

Keywords: Quality of Life; Caregiver Burden; Family Caregivers; Femoral Neck Fracture

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1.0 Introduction

Informal caregiving plays a vital role in the continuum of care for individuals living with significant health conditions, particularly older adults recovering from mobility-limiting injuries such as femoral neck fractures. Family members frequently assume primary responsibility for providing daily physical assistance, emotional support, and practical care to facilitate recovery and maintain functional independence. This role becomes especially demanding when caring for elderly individuals who commonly present with multiple comorbidities, frailty, and functional dependency, thereby increasing the complexity and duration of caregiving responsibilities. Consequently, caregivers are often exposed to heightened physical demands and psychological strain that may adversely affect their well-being (Ahmad Zubaidi et al., 2020; Verma & Chauhan, 2020).

In the context of femoral neck fractures, caregiving demands are particularly intensive. Caregivers are required to manage a wide range of tasks, including mobility assistance, pain control, wound monitoring, rehabilitation exercises, and adherence to scheduled follow-up appointments. These responsibilities often begin abruptly following hospital discharge, leaving caregivers with limited preparation or formal training. When adequate knowledge, resources, or access to structured support services are lacking, caregivers are more vulnerable to stress, fatigue, and deterioration in overall quality of life (Xiao & Zhou, 2020).

Femoral neck fractures involve the proximal region of the femur and predominantly affect older adults due to osteoporosis, falls, and age-related musculoskeletal decline (Jha et al., 2022). As the longest and strongest bone in the human body, the femur is essential for weight-bearing and mobility; fractures in this region therefore result in significant functional impairment and loss of independence (Tortora & Derrickson, 2017). Surgical intervention is commonly required, followed by a prolonged period of postoperative rehabilitation. During recovery, patients become highly dependent on caregivers for assistance with activities of daily living, medication management, and physiotherapy. Globally, the incidence of femoral neck fractures continues to rise, particularly in Asia, reflecting rapid population ageing and reinforcing the growing reliance on informal caregivers (Ong et al., 2020).

Caregiving for femoral neck fracture patients involves sustained physical effort and emotional commitment. Tasks such as toileting assistance, bathing, wound care, and continuous supervision during mobility and rehabilitation demand considerable time and energy. These demands frequently disrupt caregivers' personal routines, employment responsibilities, and social relationships, contributing to chronic stress and reduced well-being. Prolonged exposure to such stressors may lead to cumulative physical exhaustion and psychological distress, particularly among caregivers who receive limited guidance or follow-up support from healthcare services (Xiao & Zhou, 2020).

In Malaysia, informal caregiving is deeply embedded within cultural and familial expectations, with family members traditionally assuming responsibility for caring for ill or dependent relatives. Despite this, empirical research examining caregiving burden and quality of life among caregivers of femoral neck fracture patients remains limited. Caregiving experiences may vary across geographical contexts. In rural areas, caregivers often encounter barriers related to limited healthcare access, transportation challenges, and reduced availability of rehabilitation services. In contrast, caregivers in urban settings may face overcrowded public hospitals, long waiting times, and constrained resources, which can hinder continuity of care and intensify caregiver strain (Hasim et al., 2022).

The scarcity of Malaysia-specific evidence represents a significant gap in the literature. As the population continues to age and hip-related fractures increase, addressing caregiver well-being becomes essential for optimising patient recovery and sustaining family-based care systems. Caregivers have been described as "hidden patients," whose unmet physical, psychological, and social needs may adversely affect both their own health and patient outcomes (Sukchokpanich et al., 2023). Therefore, this study aims to examine the relationship between quality of life and caregiving burden among family caregivers of patients with femoral neck fractures in Malaysian public hospitals.

2.0 Literature Review

Femoral neck fractures represent a significant clinical and social concern, particularly among older adults who experience declining bone density, reduced mobility, and increased vulnerability to falls. As the longest and strongest bone in the human body, the femur plays a crucial role in weight-bearing and lower-limb movement; therefore, fractures involving the femoral neck often result in severe functional impairment and high levels of dependency (Jha et al., 2022). These fractures commonly occur in elderly populations due to osteoporosis and falls and may lead to complications such as avascular necrosis, delayed mobility, and prolonged immobility. Surgical management, including procedures such as hemiarthroplasty, is frequently required; however, postoperative recovery relies heavily on continuous home-based caregiving support (Xiao & Zhou, 2020).

Family caregivers assume a central role in supporting recovery following femoral neck fractures. Their responsibilities include assisting with activities of daily living, monitoring symptoms, managing medications, and providing emotional reassurance. Longo et al. (2020) emphasised that caregivers act as constant companions throughout the rehabilitation process, contributing to patient safety and continuity of care. Similarly, Sukchokpanich et al. (2023) described caregivers as trusted individuals who support patients in coping with both physical limitations and psychological challenges associated with hip fractures. Despite their essential contribution, caregiving responsibilities demand substantial time, physical effort, and financial resources. Barragán Rodríguez et al. (2020) reported that caregivers frequently experience financial strain related to medical expenses, transportation costs, and the purchase of assistive devices, highlighting the economic impact of caregiving.

The quality of life (QoL) of family caregivers has been widely examined in the literature, with many studies reporting negative consequences associated with prolonged caregiving. Verma and Chauhan (2020) noted that caregivers, who are often untrained and unpaid, experience emotional exhaustion, physical fatigue, and social disruption. Soen et al. (2021) found that interruptions to daily routines and employment responsibilities significantly reduced caregivers' life satisfaction and emotional well-being. Chen et al. (2021) further highlighted those concerns regarding long-term disability and patient dependency contributed to heightened anxiety and reduced QoL among caregivers. Collectively, these findings demonstrate that caregiving responsibilities can adversely affect caregivers' mental health, social engagement, and overall well-being.

Caregiver burden has also emerged as a key theme in caregiving research. Sukchokpanich et al. (2023) described caregiving as an added obligation that intensifies stress, particularly when patients require prolonged assistance and supervision. Financial pressures, repeated hospital visits, and the need for specialised equipment further contribute to caregiver burden (Chen et al., 2021). Von Kaeppler et al. (2021) supported these findings, reporting that financial strain and psychological stress were associated with increased levels of anxiety and depressive symptoms among caregivers. However, much of this evidence originates from Western or non-Malaysian Asian contexts, limiting its applicability to the Malaysian setting.

Caregiving in Malaysia presents unique cultural, socioeconomic, and geographical challenges. Bit-Lian Yee et al. (2022) highlighted the complexity of caring for elderly fracture patients who are highly dependent and vulnerable to complications. Caregivers are also required to ensure adherence to follow-up care, which may be constrained by limited healthcare access, particularly in rural areas (Hasim et al., 2022). Cultural beliefs and reliance on traditional practices may further delay professional treatment (Chan Wan Xin &

Salmah Mohamad Yusoff, 2023). Despite these challenges, Malaysia-specific evidence examining caregiver burden and QoL remains limited, indicating a critical gap in localized research.

3.0 Methodology

This study adopted a quantitative cross-sectional design to assess the relationship between caregiver burden and quality of life among family caregivers of patients with femoral neck fractures. A total of 176 respondents aged 18 years and above were recruited, with the minimum sample size determined using the Raosoft calculator to ensure generalizability and sufficient statistical power.

Convenience sampling was employed in this study. This approach was chosen because family caregivers of femoral neck fracture patients represent a hard-to-reach population, often dispersed across communities and engaged in demanding caregiving roles. Random sampling, while ideal for minimizing bias, was not feasible due to logistical constraints, limited availability of caregivers during clinic visits, and the absence of a comprehensive sampling frame for this population. Convenience sampling allowed researchers to access caregivers directly at orthopedic clinics, ensuring timely recruitment and adequate sample size. This method has also been widely applied in recent caregiving studies, particularly in contexts where caregivers are recruited from hospital or community settings (Kassim et al., 2022).

Nevertheless, convenience sampling carries potential biases. The sample may not fully represent all caregivers, particularly those who do not attend follow-up appointments or who reside in remote areas. Caregivers with heavier burdens may have been less likely to participate, while those with greater availability may be overrepresented. These limitations were acknowledged, and efforts were made to mitigate bias by recruiting across two hospitals in different regions of Malaysia to capture diverse demographic and socioeconomic backgrounds.

The inclusion criteria required participants to be family caregivers aged 18 years and above who were directly involved in providing care to patients diagnosed with femoral neck fractures. This criterion ensured that respondents had sufficient maturity and caregiving responsibility to provide reliable information about their experiences. Excluding professional caregivers allowed the study to focus specifically on informal caregiving, which is most relevant in the Malaysian context where family members traditionally assume primary responsibility for care.

Data collection was conducted at orthopedic clinics in two public hospitals located in West and East Malaysia. The decision to focus on public hospitals was deliberate. Public hospitals serve the majority of the Malaysian population, particularly middle- and lower-income groups who are most likely to rely on family caregiving due to limited access to private healthcare services. By targeting public hospitals, the study was able to capture the experiences of caregivers within the mainstream healthcare system, reflecting the realities of resource constraints, long waiting times, and limited rehabilitation support. This focus also allowed for comparison between urban and rural contexts, as public hospitals in different regions face distinct challenges in service delivery and accessibility.

Data were collected using an adapted questionnaire developed in a previous study. The adaptation process followed updated guidelines for translation and cultural validation, involving forward and backward translation by certified bilingual experts to ensure linguistic and conceptual equivalence for both English and Bahasa Malaysia versions (Mokkink et al., 2020). Content validity was confirmed through expert assessment and community feedback to ensure clarity and relevance of the items. A pilot study was conducted prior to the main data collection, yielding Cronbach's alpha values ranging from 0.78 to 0.92, consistent with current standards for acceptable to excellent internal reliability (Trizano-Hermosilla & Alvarado, 2021).

The final questionnaire consisted of three sections. Section A gathered demographic characteristics of caregivers. Section B included the SF-36, a widely used and recently reaffirmed instrument for assessing eight domains of quality of life, including physical functioning, emotional well-being, pain, vitality, and social functioning (García-Gordillo et al., 2020). Section C included the Caregiver Burden Inventory (CBI), which assesses five dimensions: time dependence, developmental burden, physical burden, social strain, and emotional burden. The CBI continues to demonstrate strong validity and relevance in current caregiver burden research (Lee et al., 2023).

Data collection was conducted from August to October 2025 following ethical approval from the Institutional Ethics Committee (FERC/FSK/MR/2025/00104) and the Medical Research & Ethics Committee [25-01977-RYI (1)]. Self-reported questionnaires were administered to family caregivers during clinic visits. Data were analyzed using SPSS Version 28.0, with descriptive statistics used to assess caregiver burden and quality of life, and inferential analyses applied to examine relationships between variables.

3.0 Finding

3.1 Characteristics of Patients

A total of 176 patients participated in this study. The gender distribution was almost equal, with females comprising 50.6% (n=89) and males 49.4% (n=87). The patients represented a diverse range of ethnic backgrounds, with Bumiputera Sabah constituting the most significant proportion (21.0%), followed by Malay (19.3%), Bumiputera Sarawak (15.3%), Chinese (18.2%), Indian (13.6%), and other ethnicities (12.5%).

More than half of the patients (51.1%) reported prior work experience. In terms of family roles, the majority identified themselves as parents (35.2%) and wives (34.1%), while husbands and other roles each accounted for 15.3%. Educational attainment also varied, with most patients having completed secondary education (44.9%), followed by tertiary education (31.3%) and primary education (23.9%). Overall, the findings illustrate a socio-demographically diverse patient population with varying educational backgrounds.

Table 3.1 Demographic Characteristics of Patients

Variables	Frequency	Percentage	Variables	Frequency	Percentage
Gender			**Working experience**		
Female	89	50.6	Yes	90	51.1
Male	87	49.4	No	86	48.9
Ethnic			**Role and responsibility in the family**		
Malay	34	19.3	Husband	27	15.3
Chinese	32	18.2	Wife	60	34.1
Indian	24	13.6	Parent	62	35.2
Bumiputera Sarawak	27	15.3	Others	27	15.3
Bumiputera Sabah	37	21	**Level of education**		
Others	22	12.5	Primary	42	23.9
			Secondary	79	44.9
			Tertiary	55	31.3

3.2 Characteristics of Caregivers

A total of 176 caregivers were included in this study. Slightly more female caregivers (51.7%) participated than male caregivers (48.3%). Caregivers also represented various ethnic groups, with Chinese caregivers forming the largest subgroup (21.0%), followed by Bumiputera Sabah (18.2%), Indian (18.8%), Malay (14.8%), Bumiputera Sarawak (14.8%), and others (12.5%).

The caregivers were related to the patients in different ways, with child comprising the highest proportion (32.4%), followed by spouse (22.2%), parents (21.6%), siblings (8.0%), and other relationships (15.9%). Nearly half of the caregivers were single (46.0%), while 28.4% were married. Their educational levels were similar to those of the patients, with secondary education being most common (43.2%), followed by tertiary (32.4%) and primary education (24.4%).

Employment status was mixed: 24.4% were part-time workers, 24.4% were unemployed, 23.3% were students, 11.9% were full-time employees, and 15.9% were retirees. About 43.8% of caregivers reported previous caregiving experience, although only an equal proportion (43.8%) served as the sole caregiver. Slightly more than half (51.7%) lived with the patient, and 48.9% were responsible for caring for additional family members.

Self-rated health varied: 36.4% reported good health, and 27.3% reported poor health. Nearly half (48.3%) indicated having a chronic health condition. Financially, more than half (54.0%) stated that their household income matched their expenses, while 21.0% reported that their income was lower than their expenses. Slightly more than half (51.7%) received financial support from family members. Regarding caregiving support, 37.5% reported receiving good support, whereas 17.0% reported receiving little to no support. Slightly over half (53.4%) had received information related to patient care, while 46.6% had not. These findings highlight the diverse caregiving capacities, financial circumstances, and support systems among caregivers.

Table 3.2 Characteristics of Caregivers

Variables	Frequency	Percentage	Variables	Frequency	Percentage
Gender			**Sole caregiver responsible**		
Female	91	51.7	Yes	77	43.8
Male	85	48.3	No	99	56.3
Ethnicity			**Current living situation**		
Malay	26	14.8	Live with patient	91	51.7
Chinese	37	21.0	Live different household	85	48.3
Indian	33	18.8	**Provide care for other family members**		
Bumiputera Sarawak	26	14.8	Yes	86	48.9
Bumiputera Sabah	32	18.2	No	90	51.1
Others	22	12.5	**Self-rating overall health**		
Relationship to patient			Excellent	24	13.6
Spouse	39	22.2	Good	64	36.4
Parent	38	21.6	Fair	40	22.7
Child	57	32.4	Poor	48	27.3
Sibling	14	8.0	**Chronic health condition**		
Others	28	15.9	Yes	85	48.3

Marital status		
Married	50	28.4
Single	81	46.0
Others	45	25.6
Level of education		
Primary	43	24.4
Secondary	76	43.2
Tertiary	57	32.4
Current employment status		
Employed full time	21	11.9
Employed part time	43	24.4
Unemployed	43	24.4
Student	41	23.3
Retire	28	15.9
Previous experience of caregiving		
Yes	77	43.8
No	99	56.3
No	91	51.7
Total household income		
Lower than expenses	37	21
Equal to expenses	95	54
Higher than expenses	44	25
Receiving financial aid from family members		
Yes	91	51.7
No	85	48.3
Describing support while caregiving		
Very good support	26	14.8
Good support	66	37.5
Some support	54	30.7
Little to no support	30	17
Receive information on how to take care of patients		
Yes	94	53.4
No	82	46.6

3.3 Quality of Life of Caregivers

Caregivers' quality of life was assessed using the SF-36. The mean Physical Component Summary (PCS) score was 48.84 (SD = 10.26), indicating moderate physical functioning. Among the physical subscales, general health recorded the highest mean score (51.87). In contrast, role limitations due to physical health had the lowest (45.73), suggesting that physical health problems adversely affected caregivers' ability to perform daily responsibilities.

The Mental Component Summary (MCS) score was slightly higher at 51.81 (SD = 11.48), reflecting relatively better mental well-being among caregivers. Emotional well-being (mean = 52.86) and social functioning (mean = 52.24) showed the strongest scores within the mental health domains. However, the energy/fatigue subscale (mean = 48.92) indicated reduced vitality and fatigue as common concerns among caregivers. Overall, these results suggest that although caregivers generally maintained moderate mental health and social functioning, physical limitations and fatigue posed significant challenges to their overall quality of life.

Table 3. 3 Quality of Life of Caregivers

SHORT FORM SURVEY (SF-36)	Mean	SD	SHORT FORM SURVEY (SF-36)	Mean	SD
Physical Component Summary Score	48.84	10.26	Mental Component Summary Score	51.81	11.48
Role limitations due to physical health	45.73	23.67	Role limitations due to emotional problems	53.21	31.30
Physical functioning	48.18	12.75	Energy/fatigue	48.92	15.25
Pain	49.55	21.80	Emotional well-being	52.86	13.40
General health	51.87	15.86	Social functioning	52.24	25.61

3.4 Caregiver Burden

Table 3. 4 Caregiver Burden

Care Burden	**Mean**	**SD**
Time Dependency	10.03	2.82
Development	9.61	2.97
Physical Health	7.86	2.69
Emotional Health	9.23	3.15
Social Relationships	9.65	3.18
Total	46.39	8.17

Caregiver burden was measured using the Caregiver Burden Inventory (CBI), which yielded a total mean score of 46.39 (SD = 8.17), indicating a moderate to high level of overall burden. Among the five CBI domains, time-dependency burden scored the highest (mean = 10.03), demonstrating that caregivers felt substantially constrained by the extensive time commitment required for caregiving. This was followed by burden related to social relationships (mean = 9.65) and developmental burden (mean = 9.61), reflecting disruptions in social interactions, personal growth, and career opportunities.

Emotional burden (mean = 9.23) also scored moderately high, indicating the psychological strain associated with caregiving duties. Physical burden had the lowest mean score (7.86), though it still highlighted noticeable physical strain among caregivers. Collectively, the findings indicate that caregivers face multidimensional burdens, with time constraints, social limitations, and emotional challenges emerging as the most significant contributors to caregiver burden.

4.0 Discussion

The socio-demographic diversity observed among patients with femoral neck fractures reflects the broader demographic composition of Malaysia and highlights the importance of culturally sensitive healthcare approaches. The near-equal gender distribution and representation of multiple ethnic groups align with national population patterns and support previous findings that fracture risk and recovery outcomes are influenced by sociocultural contexts (Kong et al., 2021). From a theoretical perspective, these findings are consistent with Bronfenbrenner's ecological systems theory, which emphasises that health outcomes are shaped by interactions between individuals and their social, cultural, and environmental environments (Bronfenbrenner, 1979). Patients' prior employment status and educational attainment further suggest that femoral neck fractures frequently affect individuals who were previously active contributors to their households and communities, thereby amplifying the social and economic consequences of injury. This challenges assumptions within ecological systems theory that family and community networks can reliably buffer health shocks, as fractures disrupt household productivity and caregiving arrangements.

Caregivers in this study also demonstrated considerable socio-demographic diversity, with females forming a slight majority and caregivers representing varied ethnic and educational backgrounds. Notably, children emerged as the predominant caregivers, followed by spouses, contrasting with traditional caregiving models that position spouses as primary caregivers (Xiao & Zhou, 2020). This pattern may be interpreted through family systems theory, which posits that caregiving roles are distributed according to cultural norms, family structure, and availability of members (Bowen, 1978). The findings extend this theory by demonstrating how employment instability and economic vulnerability particularly among caregivers who were unemployed, part-time workers, or students reshape caregiving roles in contemporary Malaysian families. These observations align with stress process theory, which links role strain to financial and psychological stressors (Brites et al., 2024), while also highlighting that caregiver strain is intensified by broader structural factors rather than individual circumstances alone.

Quality-of-life outcomes revealed moderate physical functioning among caregivers, with role limitations due to physical health particularly evident. This supports the caregiver stress model, which suggests that physically demanding caregiving tasks exacerbate strain, especially in conditions requiring mobility assistance such as femoral neck fractures (Pearlin et al., 1990). Mental health findings, however, indicated relatively preserved emotional and social functioning, consistent with the buffering hypothesis, which proposes that social support mitigates psychological distress (Cohen & Wills, 1985). Despite this, reduced vitality and persistent fatigue underscore the chronic nature of caregiving stress, supporting evidence that prolonged caregiving leads to exhaustion and diminished energy reserves (Datta & Kar, 2016; Sukchokpanich et al., 2023). These findings suggest that while social support may promote emotional resilience, it does not fully offset the physical demands of caregiving.

Caregiver burden was predominantly moderate to high, with time-dependent burden emerging as the most prominent dimension. This reflects the concept of role captivity, whereby caregivers experience restrictions on personal freedom due to the extensive time commitment required (Pearlin et al., 1990). Social and developmental burdens further illustrate disruptions to interpersonal relationships and constraints on personal growth, resonating with role theory's emphasis on conflict between caregiving responsibilities and other social roles (Biddle, 1986). Although physical burden was comparatively lower, it remained clinically relevant, indicating cumulative strain. Collectively, these findings highlight the need for caregiver-inclusive support strategies that acknowledge time-related demands as a central component of caregiving burden in the Malaysian context (Conti et al., 2019).

5.0 Conclusion and Recommendations

This study demonstrates that informal caregivers of patients with femoral neck fractures face multidimensional challenges that affect their physical, emotional, and social well-being. Caregivers reported moderate physical functioning but significant role limitations, alongside resilience in mental health supported by social and emotional networks. Nevertheless, fatigue and reduced vitality were common, reflecting the chronic stressors inherent in caregiving. Burden levels were moderate to high, with time-dependent, social, and emotional strains emerging as the most significant contributors. These findings highlight that caregiving extends beyond private family responsibility and should be recognized as a public health issue with economic and social implications.

Several limitations must be acknowledged. The cross-sectional design restricts causal interpretation and prevents examination of changes in caregiver burden over time. Reliance on self-reported measures may introduce bias, and the single cultural context limits generalizability. The absence of qualitative data also restricts deeper exploration of lived experiences.

Recommendations include integrating structured caregiver training into orthopedic rehabilitation, providing financial subsidies for assistive devices and transportation, and promoting workplace flexibility to reduce role strain. Community-based peer support groups and culturally tailored educational resources should be strengthened. Future research should evaluate interventions to reduce caregiver burden, conduct longitudinal studies, and explore caregiving experiences in other patient groups such as stroke or dementia.

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Paper Contribution to Related Field of Study

This study contributes to the growing body of research on informal caregiving in orthopedic contexts by examining the quality of life and burden among caregivers of femoral neck fracture patients in Malaysia. It highlights the socio-demographic diversity of caregivers, the influence of cultural norms on caregiving roles, and the multidimensional nature of caregiver burden. By integrating theoretical perspectives such as stress process theory, role theory, and the buffering hypothesis, the study advances understanding of how economic vulnerability, social support, and cultural context shape caregiving outcomes, offering insights for policy, practice, and future comparative research.

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