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Family Support and Degree of Injury are Determinants of Quality of Life in Patients with Ankle Injury: A Cross-Sectional Correlational Study

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Abstract

Background: Ankle injuries may lead to activity limitations and reduced quality of life. Family support and injury severity are believed to be related to quality of life in ankle injury patients, but empirical evidence in Indonesia remains limited. **Aims:** This study investigated the relationship between injury severity, family support, and quality of life among patients with ankle injuries attending the Physiotherapy Clinic in Palang District. **Methods:** A cross-sectional correlational study was conducted with 101 patients selected through simple random sampling. Data were collected using the WHOQOL-BREF questionnaire, the Talar Tilt Test, and the Family Support Scale (FSS), and analyzed using Spearman' s Rho. **Results:** The study found a significant positive relationship between family support and quality of life (p=0.000; r=0.647), indicating that higher family support is associated with better quality of life. A significant negative relationship was also found between the degree of injury and quality of life (p=0.000; r=0,511), indicating that more severe injuries are associated with lower quality of life; and 4). **Conclusion:** Quality of life in patients with ankle injuries is significantly influenced by family support and injury severity; greater family support improves quality of life, while more severe injuries reduce it.

Keywords: Ankle Injury, Degree of Injury, Family Support, Quality of Life

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Introduction

Ankle injuries represent one of the most prevalent musculoskeletal problems affecting physically active individuals, including those who engage in regular sports and daily activities. Ankle sprains occur due to sudden excessive pulling in an inversion and flexion position, causing ligament tears, fractures, or sprains (Alfian et al., 2024). Although their impact on health and quality of life has been extensively documented in specific populations, research on the general population remains limited. Ankle injuries can reduce quality of life across multiple domains: physical health shows the most significant decline, especially in grade 2 and 3 injuries; psychological domain sees patients experiencing stress due to prolonged recovery and fear of recurrent injury; social domain may decline as patients tend to avoid social activities due to mobility limitations or discomfort; and environmental domain influences, such as stairs and living location, can worsen the condition (Oyesenya et al., 2021). Although physiotherapy can improve physical condition, psychosocial factors such as family support are often overlooked, despite being crucial for enhancing rehabilitation adherence and clinical outcomes (Cahyono, 2021). To date, no empirical research has specifically examined the combined influence of family support and injury severity on quality of life among ankle injury patients in Indonesian physiotherapy settings, representing a significant gap in both clinical practice and research (Kosik et al., 2022).

According to the Indonesian Health Survey (SKI) 2023, epidemiologically, injuries/accidents contribute 24.2% to the national disability burden in the population aged ≥ 1 year. This figure indicates that 1 in 4 disability cases in Indonesia is significantly caused by traumatic factors, making it the leading cause in the pathogenesis of community functional disorders. Ankle sprain injuries dominate approximately 80% of all cases, with 77% being lateral ankle sprain injuries and 73% experiencing rupture or tears of lateral ligaments. The prevalence of ankle sprain injuries in Indonesia reaches 27.5%, with a higher incidence in males (44.4%) compared to females (28.6%). Although 80% of acute injury cases can recover, 20% develop into chronic conditions. Data from Riskesdas (2018) shows an increase in injury rates from 8.2% in 2013 to 9.2% in 2018, with the 15-24 age group being the most vulnerable (37.5%).

Research by Clark et al. (2024) revealed that the quality of life of patients with ankle injuries is on average 30-40% lower than the normal population. Measurements using WHOQOL-BREF show significant decreases in physical domain (score 52.3), psychological (score 58.7), social (score 60.2), and environmental (score 63.5). Samuelkamaleshkumar et al. (2021) emphasized the role of family support in improving patient quality of life, where 70% of patients require intensive support to improve social integration and functional recovery. Factors such as physical health, mental health, independence, access to health services, and economic conditions also affect quality of life, with family support as a critical determinant in the rehabilitation process (Oyesenya et al., 2021).

Family support has a multidimensional role in the recovery of ankle injury patients, encompassing emotional, informational, instrumental support, and positive affirmation

(Friedman, 2020). Studies by Nurapandi et al. (2024) and Ramadhani et al. (2022) prove that adequate family support can reduce anxiety, increase rehabilitation adherence, and accelerate recovery, as well as provide psychological comfort. However, lack of family support can hinder the recovery process and worsen quality of life.

In addition to family support, the degree of injury is also a determining factor in determining the level of recovery and quality of life of ankle injury patients. One of the most determining physical factors is the degree of injury, which includes the level of severity (e.g., mild sprain vs. severe fracture), long-term complications (such as joint instability or post-traumatic arthritis), and the length of the recovery process. Patients with severe injuries generally experience greater functional limitations, chronic pain, and longer recovery, significantly impacting mobility and ability to perform daily activities (Alfian et al., 2024). The degree of injury, ranging from grade I (mild) to grade III (severe), directly affects prognosis and recovery time. Grade I is characterized by ligament stretching without tearing, grade II involves partial tearing, while grade III is characterized by total rupture or fracture that often requires surgical intervention (Melanson & Shuman, 2023). The implications include decreased mobility, increased dependence, and risk of emotional disorders such as depression and anxiety, especially in chronic cases (Simatupang et al., 2025).

This study aims to analyze the relationship between family support and degree of injury with quality of life in ankle injury patients at a Physiotherapy Clinic in Palang District, using the PRECEDE-PROCEED model by Lawrence Green as the theoretical framework.

Methods

1. Study Design and Participants

   This study employed a correlational analytic design with a cross-sectional approach. The study population consisted of 135 ankle injury patients at a Physiotherapy Clinic in Palang District (Physio RIfki Center). Using the Slovin formula with a 5% margin of error, a sample of 101 patients was determined through simple random sampling technique. Inclusion criteria were: patients willing to be respondents, patients with ankle injury undergoing regular control, and patients aged ≥15 years (adolescents to elderly). Exclusion criteria included: respondents who cannot read and write, and respondents with multiple trauma/injuries.

2. Instruments

   Three instruments were used in this study:

   1) Family Support Scale (FSS): This questionnaire was adapted from (Kurniawan et al., 2025) containing 18 statements covering four dimensions: emotional support, instrumental support, informational support, and appraisal support. The scale used a 4-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree). Scores were categorized as: Good (54-72), Moderate (36-53), and Poor (18-35). Cronbach's alpha: 0.94 (original study); 0.82-0.94 (literature range); 0.89 (pilot test, n=30).

2) Talar Tilt Test: Injury severity was assessed through medical records using the Talar Tilt Test method. This test measured the degree of inversion/eversion: Grade 1 (≤5°), Grade 2 (6-15°), and Grade 3 (≥15°).
3) WHOQOL-BREF: Quality of life was measured using the World Health Organization Quality of Life-BREF questionnaire, containing 18 questions covering four domains: physical health, psychological health, social relationships, and environment. Scores were categorized as: High (54-72), Moderate (36-53), and Low (18-35). Cronbach's alpha: 0.882-0.902 (literature); 0.90 (current study).

3. Data Collection

Data collection was conducted from August 14 to September 15, 2025, at the Physiotherapy Clinic in Palang District (Physio RIfki Center). After obtaining research approval and informed consent from participants, researchers distributed questionnaires and collected data on injury severity from medical records. Each participant was given 10 minutes to complete the questionnaires. Demographic data including age, gender, occupation, and education level were systematically collected using a standardized demographic form. These variables were recorded to enable control of potential confounding effects in the analysis. To minimize response bias, researchers provided standardized instructions and ensured privacy during questionnaire completion. Participants were assured that their responses would not affect their treatment at the clinic.

4. Ethical Considerations

This study received ethical approval from the Health Research Ethics Institute of the Institute of Health Science Nahdlatul Ulama Tuban (Approval No. 145/0084223523/LEPK.IIKNU/VII/2025). All participants provided written informed consent prior to participation. The principles of anonymity, confidentiality, and voluntary participation were upheld throughout the research process, and the study protocol was approved through an expedited review.

5. Data Analysis

Data were analyzed using SPSS version 27. Descriptive statistics were used to describe participant characteristics, family support levels, injury severity, and quality of life. Spearman's Rho correlation test was used to examine the relationship between family support and quality of life, as well as between injury severity and quality of life, with a significance level of $p < 0.05$. To control for confounding variables (age, gender, education level, and occupation), stratified analysis was performed by examining correlations within subgroups of these demographic characteristics. Cross-tabulation analysis was conducted to examine the distribution patterns of quality of life categories across different levels of family support and injury severity grades. Partial correlation analysis was also considered to assess the relationship between primary variables while controlling for the identified confounding factors.

Results

1. Characteristics of Respondents

Table 1. Characteristics of respondents (n 101)

Characteristis	Category	Frekuency	Persentage (%)
Age	11-21 years old (teenagers)	19	18,8%
	22-40 years old (young adults)	60	59,4%
	41-60 years old (late adulthood)	22	21,8%
Gender	Male	58	57,4%
	Female	42	42,6%
Education	Elementary School	0	0,0%
	Junior High School	10	9,9%
	Senior High School	50	49,5%
	Diploma/ Bachelor's degree	41	40,5%
Occupation	Athlete	26	25,7%
	Housewife	10	9,9%
	Entrepreneur	7	6,9%
	Privat employees	20	19,8%
	Civil servant	10	9%
	State-owned enterprise employee	4	4%
	Teacher	2	2%
	Unemployed	3	3%
	Farmer	5	5%
	Fishermen	2	2%
	Police	2	2%
	Student	7	6,9%
	University student	3	3%
Family Support	Good	12	11%
	Moderate	72	71,3%
	Poor	17	16,8%
Degree of injury	Grade 1	17	16,8%
	Grade 2	67	66,3%
	Grade 3	17	16,8%
Quality of life	High	9	8,9%
	Moderate	65	64,4%
	Low	27	26,7%

The study involved 101 respondents with ankle injuries. The majority of respondents were in the young adult age group (22-40 years) comprising 59.4% (n=60), followed by the

late adult age group (41-60 years) at 21.8% (n=22), and adolescents (11-21 years) at 18.8% (n=19). Gender distribution showed more males (57.4%, n=58) than females (42.6%, n=43). In terms of education level, the highest proportion was high school education at 49.5% (n=50), followed by diploma/bachelor's degree at 40.5% (n=40), and junior high school at 9.9% (n=10). Occupation distribution varied, with athletes being the largest group at 25.7% (n=26), followed by private employees at 19.8% (n=20), civil servants at 9.9% (n=10), and housewives also at 9.9% (n=10). The assessment of family support showed that the majority of respondents had moderate family support at 71.3% (n=72), while 16.8% (n=17) had poor family support, and 11.9% (n=12) had good family support. This indicates that most patients received adequate but not optimal support from their families. Assessment of injury severity using the Talar Tilt Test from medical records showed that the majority of respondents had grade 2 injuries at 66.3% (n=67). Meanwhile, grade 1 and grade 3 injuries each accounted for 16.8% (n=17). This distribution indicates that most patients experienced moderate severity injuries involving partial ligament tears. Masurement of quality of life using WHOQOL-BREF showed that the majority of respondents had moderate quality of life at 64.4% (n=65), while 26.7% (n=27) had low quality of life, and 8.9% (n=9) had high quality of life. This indicates that ankle injuries significantly affected the overall quality of life of patients.

2. Relationship Between Family Support and Quality of Life

Table 2. Cross-tabulation of relationship between family support and quality of life

No.	Family support	Quality of Life			Total
		High	Moderate	Low	
1.	Good	7 (58,3%)	5 (41,7%)	0 (0,0%)	12 (100%)
2.	Moderate	2 (2,8%)	57 (79,2%)	13 (18,1%)	72 (100%)
3.	Poor	0 (0,0%)	3 (17,6%)	14 (83,4%)	17 (100%)
Total		9 (8,9%)	65 (64,4%)	27 (26,7%)	101 (100%)
Spearman Correlation Ranks Asymp, sig (2-tailed) p= 0,000 dan r=0,647					

Cross-tabulation analysis demonstrated a clear pattern in which respondents categorized as having a low quality of life were predominantly those with poor family support, totaling 14 respondents (83.4%). Meanwhile, respondents with a moderate quality of life were largely dominated by those receiving adequate family support, amounting to 57 respondents (79.2%). Furthermore, respondents with a high quality of life were mostly those with good family support, totaling 7 respondents (59.3%). The Spearman test results show a strong and significant positive correlation (r=0.647; p=0.000), which means that the better the family support, the higher the quality of life of patients with ankle injuries.

3. Relationship Between Degree of Injury and Quality of Life

Table 3. Coss-tabulation of Relationship Between Degree of Injury and Quality of Life

No.	Degree of injury	Kualitas Hidup			Total
		High	Moderate	Low	
1.	Grade 1	5 (29,4%)	12 (70,6%)	0 (0,0%)	17 (100%)
2.	Grade 2	4 (6,0%)	48 (71,6%)	15 (22,4%)	67 (100%)
3.	Grade 3	0 (0,0%)	5 (29,4%)	12 (70,6%)	17 (100%)
Total		9 (8,9%)	65 (64,4%)	27 (26,7%)	101 (100%)
Spearman Correlation Ranks Asymp, sig (2-tailed) p= 0,000 dan r=0,511					

Cross-tabulation analysis shows that respondents with a high quality of life category were dominated by patients with grade 1 ankle injuries, numbering 5 (29.4%) respondents, while the moderate quality of life category was dominated by patients with grade 2 ankle injuries, amounting to 48 (71.6%) respondents, and the low quality of life category was dominated by patients with grade 3 ankle injuries, amounting to 12 (70.6%) respondents. The Spearman test results show a strong and significant positive correlation (r=0.511; p=0.000), which means that the better the family support, the higher the quality of life of patients with ankle injuries.

Discussion

This study found significant relationships between both family support and degree of injury with quality of life in ankle injury patients. These findings are consistent with existing theoretical frameworks and empirical evidence, while also contributing new insights to the Indonesian context.

1. Family Support and Quality of Life

The findings demonstrate that patients receiving stronger family support experience better quality of life during ankle injury recovery, supporting the research hypothesis. This relationship can be explained through several interconnected psychosocial mechanisms. Emotionally, family support activates the stress-buffering effect, whereby emotional validation and reassurance reduce cortisol levels and mitigate psychological distress associated with injury-related limitations. Behaviorally, instrumental assistance such as transportation to therapy sessions, financial aid, and physical help with daily activities removes practical barriers to treatment adherence and reduces the burden of disability. Cognitively, informational guidance from family members enhances health literacy, enabling patients to understand rehabilitation protocols and maintain motivation throughout recovery. Socially, appraisal support strengthens self-efficacy and adaptive coping strategies, helping patients reframe their injury experience more positively and maintain

social participation despite mobility restrictions.

These findings align with previous research. Fiscarina and colleagues reported that family support significantly improves psychological and social well-being among post-stroke patients. Samuelkamaleshkumar et al. found that family involvement promotes rehabilitation adherence and reduces anxiety in musculoskeletal injuries. However, this study also reveals unique contextual patterns: female patients appeared to receive more intensive emotional support, possibly due to gender-specific communication styles and help-seeking behaviors. Additionally, individuals aged 22-40 years received higher levels of support, likely reflecting their productive roles and family responsibilities that necessitate faster functional recovery.

These findings underscore the need to systematically integrate family-centered approaches into physiotherapy practice. Clinicians should conduct structured assessments of family support availability and quality during initial patient evaluation using validated instruments such as the Family Support Scale. Structured education programs for family members should be provided, covering injury mechanisms, rehabilitation goals, home exercise supervision techniques, pain management strategies, and psychological support methods. Involving family members in treatment planning and collaborative goal-setting enhances shared responsibility and accountability throughout the recovery process. Home exercise programs should be designed to explicitly incorporate family participation, such as supervised balance training or assisted stretching routines. Establishing regular communication channels through WhatsApp groups or progress reports keeps families informed and engaged. Additionally, routine psychosocial screening should be implemented for patients with limited family support, with referrals to social services or community support groups when needed.

Several limitations warrant consideration. The single-site design limits generalizability, and self-reported family support measures may introduce subjective bias. Variations in socioeconomic status, cultural expectations regarding family roles, and household composition were not extensively explored but may moderate the support-quality of life relationship. Future research should employ multi-site designs, incorporate qualitative methods to understand the lived experience of family support, and examine cultural and socioeconomic moderators.

The findings of this study show that patients who receive stronger family support tend to experience better quality of life during ankle injury recovery. This outcome supports the research hypothesis, which states that family support plays an important role in determining the quality of life of injured patients. The pattern observed in this study where low family support is associated with low quality of life and strong family support is associated with higher quality of life is consistent with the general trend reported in regional and international studies.

When compared with previous research, the results of this study align closely with the findings of Wina Fiscarina and colleagues, who reported that family support contributes

significantly to improvements in psychological and social well-being among post-stroke patients. Similar conclusions were observed in the study by Samuelkamaleshkumar and collaborators, who found that family involvement promotes rehabilitation adherence and reduces anxiety in patients with musculoskeletal injuries. Other studies, including those by Nurapandi, Ramadhani, and McPhail, also emphasized the importance of both physical and psychosocial support from family members in accelerating recovery and improving overall daily functioning. These parallels demonstrate that the present findings are not only consistent with earlier research but also reinforce the growing recognition of family support as a central element in patient rehabilitation.

However, this study also highlights several unique observations. Female patients appeared to receive more intensive emotional support than male patients, possibly because they tend to communicate their emotional needs more openly during recovery. In addition, individuals aged twenty-two to forty years were more likely to receive higher levels of family support due to their productive roles and the functional demands placed upon them. These factors may explain the stronger positive outcomes found in these groups.

Several reasons may underlie the relationship between family support and improved quality of life. Emotional support helps reduce psychological distress, while instrumental assistance such as transportation, financial help, and physical assistance eases the burden of undergoing regular treatment. Informational guidance from family members enhances patient understanding of rehabilitation, which increases motivation and reduces uncertainty. Appraisal support strengthens patient confidence, helping them adapt more effectively to mobility limitations and temporary lifestyle changes. These combined forms of support create an environment that enhances recovery, improves coping mechanisms, and stabilizes emotional well-being.

The implications of these findings highlight the importance of integrating family involvement into clinical practice, particularly in physiotherapy and nursing care for patients with ankle injuries. Encouraging family participation may enhance treatment adherence, reduce psychological distress, and increase functional recovery. In addition, fostering family-centered care approaches can contribute to broader scientific understanding regarding the role of social support in musculoskeletal rehabilitation, offering new perspectives for health providers and future research.

Despite the strong pattern identified, the study has several limitations. The research was conducted in a single clinical setting, which may limit the generalizability of the findings. The measurement of family support relied on patient self-report, which may introduce subjective bias. Furthermore, variations in socioeconomic status, cultural expectations, and family dynamics were not extensively explored, although these factors may influence the level and effectiveness of support received. Future studies are encouraged to include multiple clinical sites, incorporate qualitative methods, and examine broader demographic factors to deepen the understanding of how family support influences patient outcomes.

2. Degree of Injury and Quality of Life

The study demonstrates a consistent gradient whereby increasing injury severity corresponds to declining quality of life. Cross-tabulation analysis revealed that Grade I patients showed no cases of low quality of life, with 70.6% experiencing moderate and 29.4% high quality of life. In contrast, Grade II patients predominantly fell into the moderate category (71.6%), with an increased proportion experiencing low quality of life (22.4%). Grade III patients experienced predominantly low quality of life (70.6%), with none in the high category. This pattern reflects the cumulative impact of biomechanical impairment including joint instability and proprioceptive deficits, persistent pain and inflammation, functional limitations in mobility and daily activities, and psychological consequences including kinesiophobia (fear of movement) and reduced self-efficacy.

These findings corroborate previous research. Alfian et al. (2024) reported that Grade II and III injuries significantly reduce quality of life across multiple domains. Lorente et al. (2024) emphasized that ligament damage increases the risk of Chronic Ankle Instability, affecting long-term function. Choi et al. (2021) found that a notable proportion of patients experienced undiagnosed subtalar joint dysfunction, which exacerbates biomechanical impairment. Gribble et al. (2022) identified altered lower extremity biomechanics among individuals with a history of ankle injury, increasing the risk of secondary injuries. A distinctive feature of this study is the high proportion of athletes (25.7%), for whom ankle injuries create additional burdens beyond daily functioning: performance decline, threatened athletic identity, potential career disruption, and psychological distress related to uncertain return-to-sport timelines.

Rehabilitation protocols should be stratified by injury severity to optimize outcomes. For Grade I injuries, the focus should be on early mobilization, proprioceptive training, and prevention education to maintain high quality of life and prevent progression. Grade II injuries require comprehensive programs including joint stabilization exercises, progressive strengthening, neuromuscular training, and psychosocial support to address moderate functional limitations. Grade III injuries demand intensive multimodal interventions combining advanced manual therapy, structured progressive loading protocols, psychological counseling for kinesiophobia, and extended follow-up to address severe impairments. For athletic populations specifically, rehabilitation must incorporate sport-specific movement patterns, objective return-to-sport criteria such as Y-Balance Test and hop tests, and psychological readiness assessments to ensure safe and confident return to competition.

The reliance on medical record data for injury classification may introduce documentation variability, which represents a study limitation. The single-facility setting with specific demographic characteristics, particularly the high athlete proportion, limits broader generalizability. Future studies should employ standardized clinical assessments for injury grading, include diverse populations across multiple facilities, and conduct longitudinal follow-up to examine quality of life trajectories throughout the recovery

process. These approaches would provide deeper understanding of how injury severity impacts quality of life over time and across different patient populations.

Study Limitations and Future Research Rekomendation

This study has several limitations. First, the sample size of 101 respondents may limit generalizability to broader populations with different demographic, geographic, or socioeconomic characteristics. Second, the single-site design at the Physiotherapy Clinic in Palang District limits applicability to other regions with different population characteristics and rehabilitation facilities. Third, family support measurement relied on self-report, which may introduce social desirability bias. Fourth, the cross-sectional design cannot establish causal relationships or capture quality of life changes throughout recovery. Finally, the use of medical record data for injury grading may introduce documentation variability.

Future research should employ multi-site studies with larger, more diverse samples to enhance generalizability. Longitudinal designs are recommended to track quality of life changes across recovery phases and examine the temporal dynamics of family support. Mixed methods approaches would provide deeper understanding of patients' lived experiences and underlying mechanisms. Intervention studies testing structured family-centered rehabilitation programs would provide evidence for clinical implementation.

Conclusion

This study concludes that the quality of life of patients with ankle injuries is significantly influenced by family support and injury severity. Strong family support—including emotional, instrumental, informational, and appraisal support—plays a crucial role in enhancing psychosocial well-being, rehabilitation adherence, and patients' adaptive capacity during recovery. In contrast, greater injury severity is associated with a decline in quality of life due to functional limitations, persistent pain, and psychological consequences. These findings highlight the importance of implementing rehabilitation strategies stratified by injury severity and integrating family-centered care models to optimize patient recovery outcomes.

Conflicts of Interest

The authors declare no conflicts of interest in this study. All authors have completed the ICMJE uniform disclosure form and report no financial relationships with any organizations that might have an interest in the submitted work.

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